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Kitamura et al.

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(54) **GAMING MACHINE**

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patent is extended or adjusted under 35
U.S.C. 154(b) by 202 days.

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G07F 17/32 (2006.01)

(52) **U.S. Cl.**
CPC **G07F 17/3211** (2013.01); **G07F 17/3286**
(2013.01)

(58) **Field of Classification Search**

CPC G07F 17/3272; G07F 17/322; G07F
17/3211; G07F 17/3286; A63F 2009/2458
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,863,242	A *	9/1989	Correa	359/601
2008/0045347	A1 *	2/2008	Stephenson et al.	463/46
2009/0093303	A1 *	4/2009	Neal	463/31
2010/0048288	A1 *	2/2010	Canterbury et al.	463/20
2010/0144432	A1 *	6/2010	Nittou	463/30
2010/0240452	A1 *	9/2010	Nittou	463/30
2010/0248808	A1 *	9/2010	Barker et al.	463/20
2011/0051038	A1 *	3/2011	Nittou	349/62
2011/0092266	A1	4/2011	Kitamura	

* cited by examiner

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(57) **ABSTRACT**

A gaming machine according to an embodiment of the present invention includes: a display panel configured to display images of a game, the display panel including a screen facing downward; a partial mirror disposed under the display panel and inclined with respect to the screen to partially reflect the images from the display panel into a forward direction; and a controller configured to execute the game and to control the display panel.

18 Claims, 44 Drawing Sheets

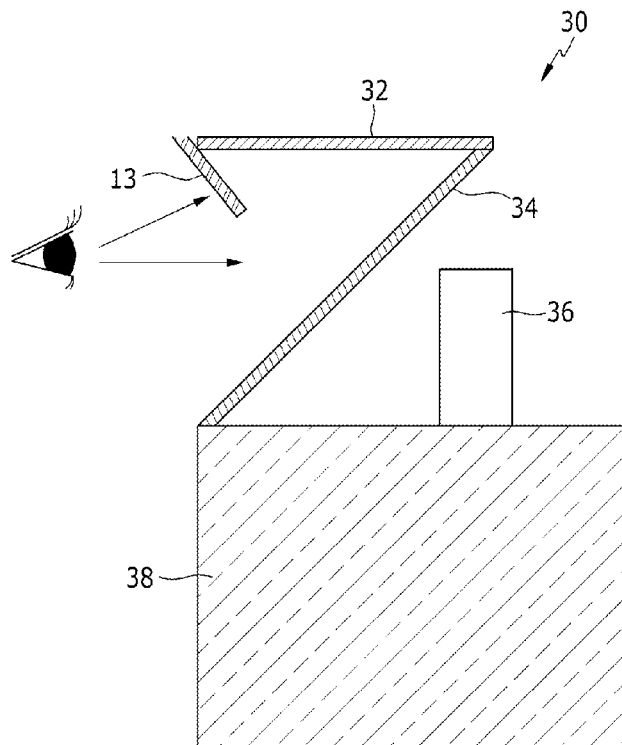


FIG. 1A

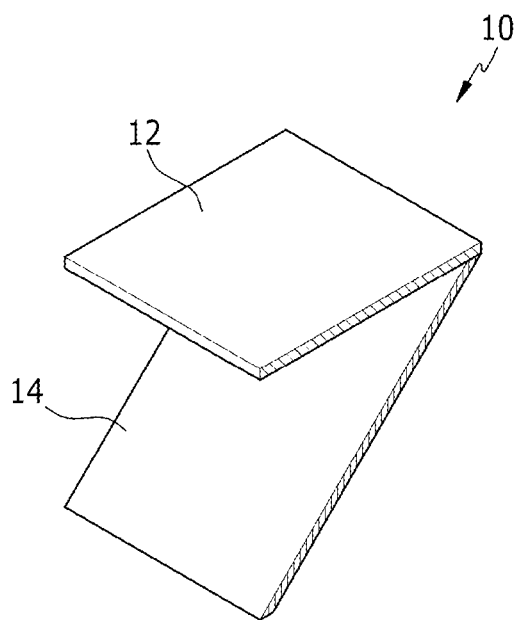


FIG. 1B

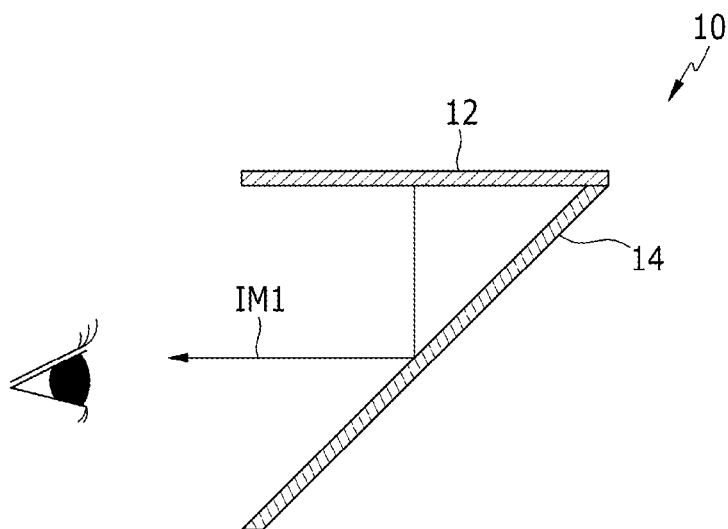


FIG. 1C

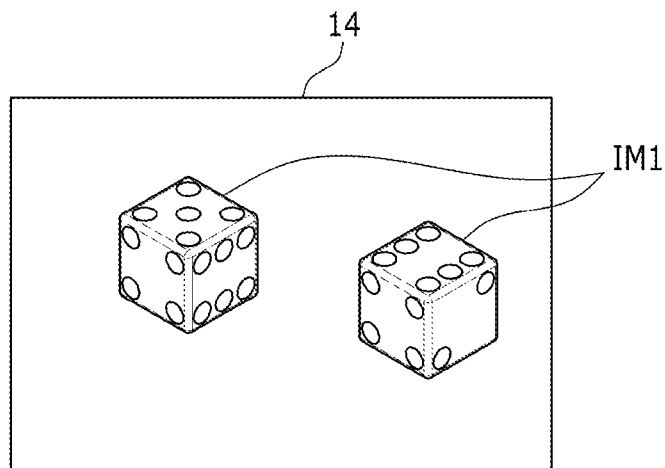


FIG. 2A

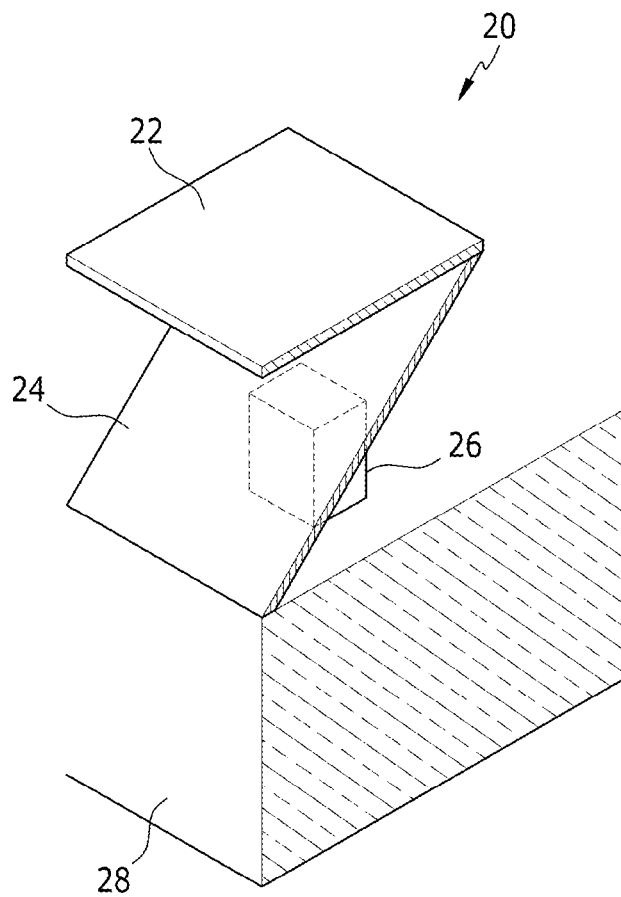


FIG. 2B

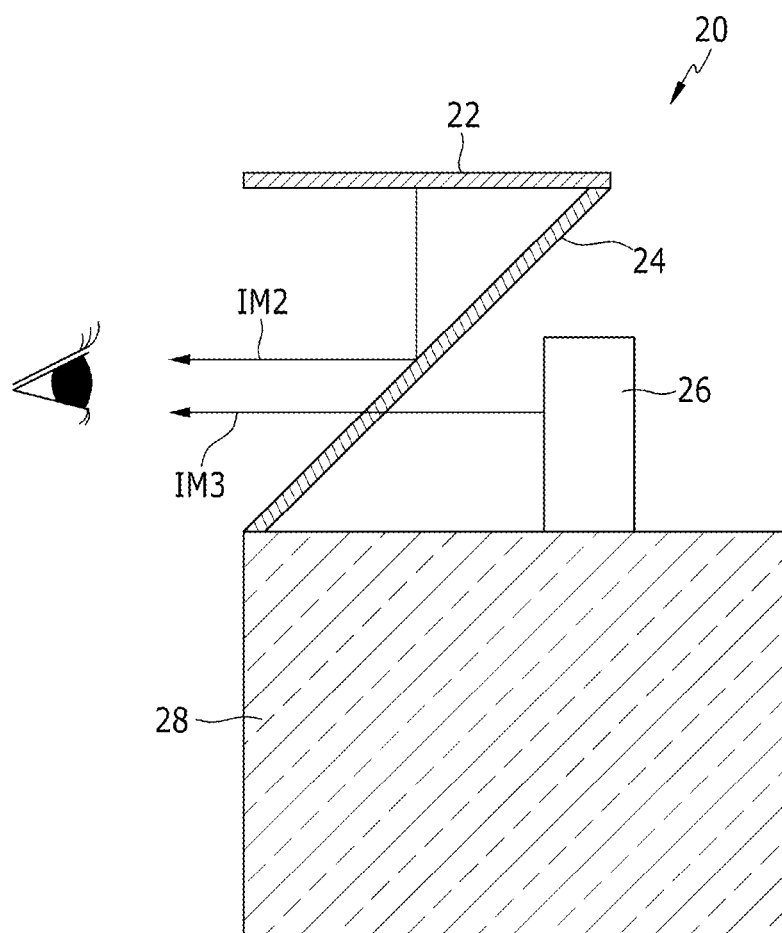


FIG.2C

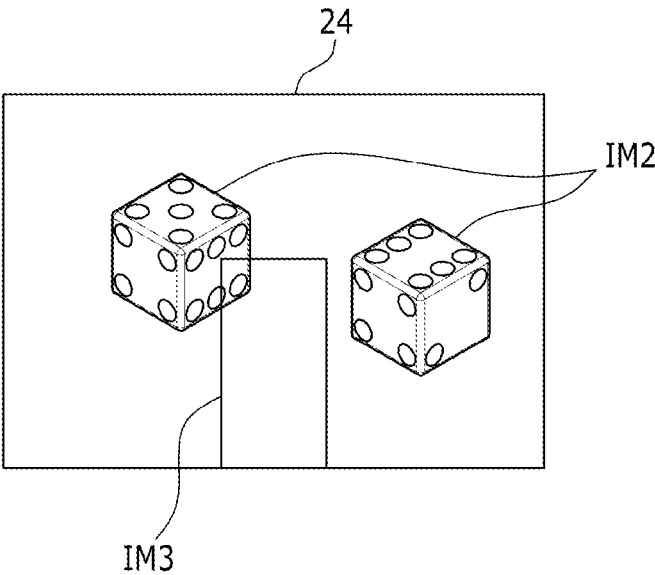


FIG.3

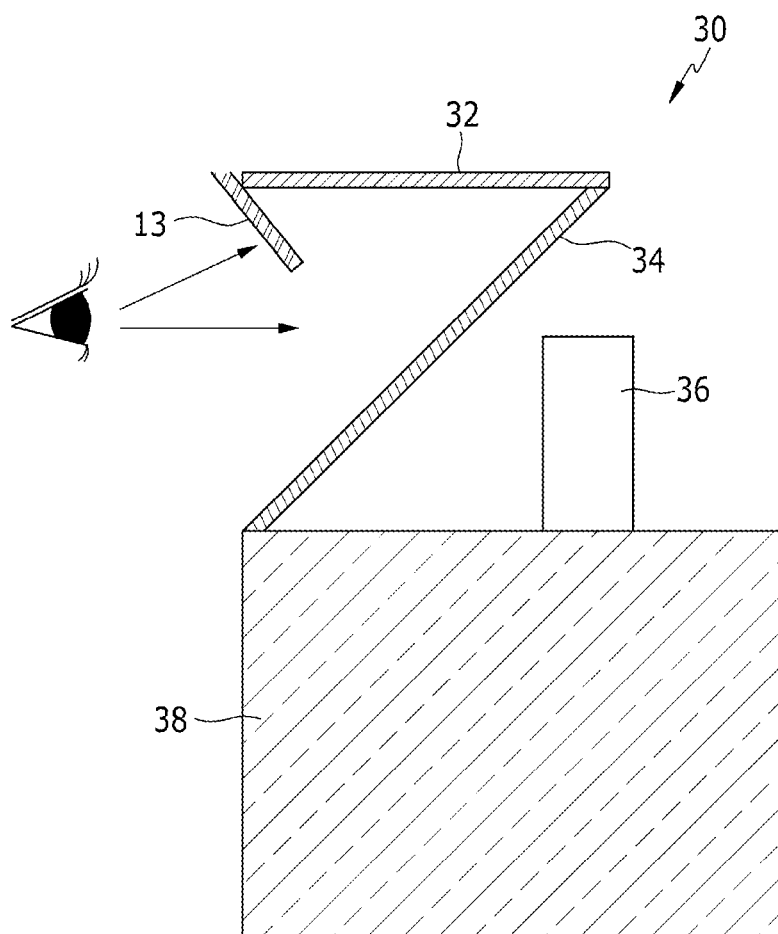


FIG.4

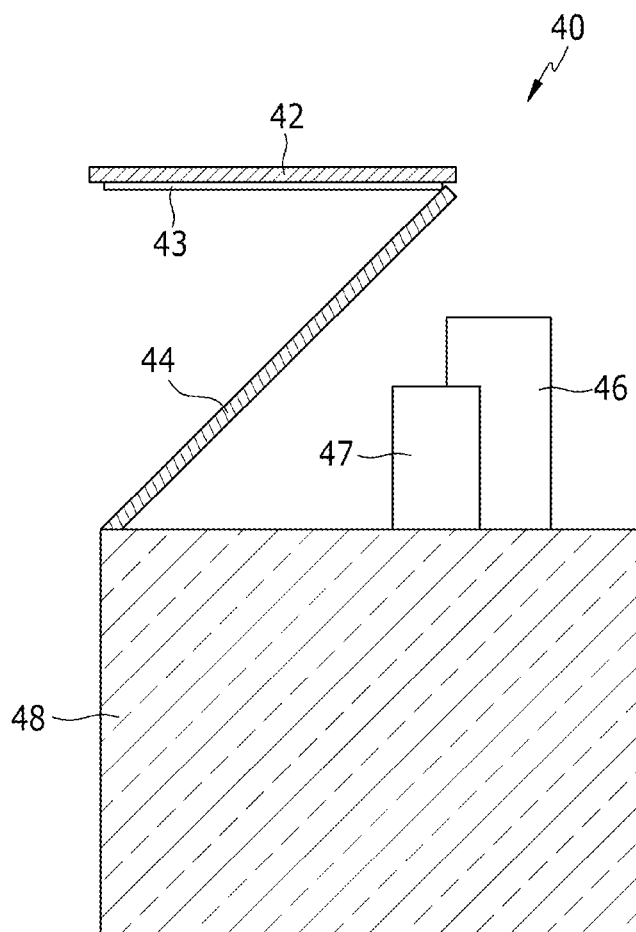


FIG.5A

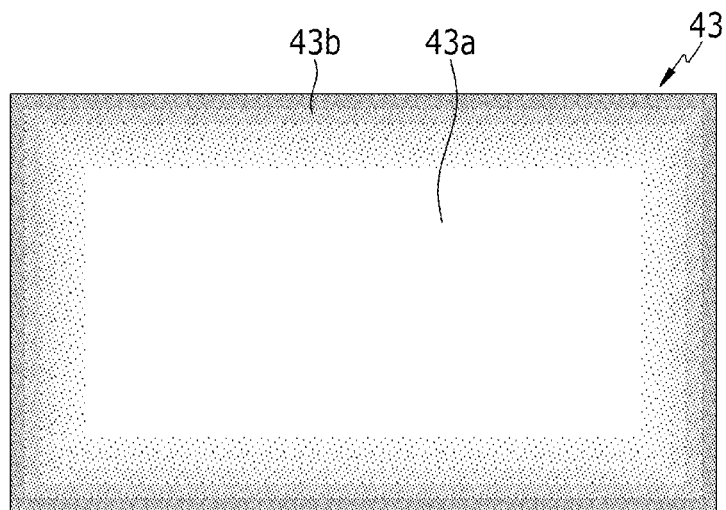


FIG.5B

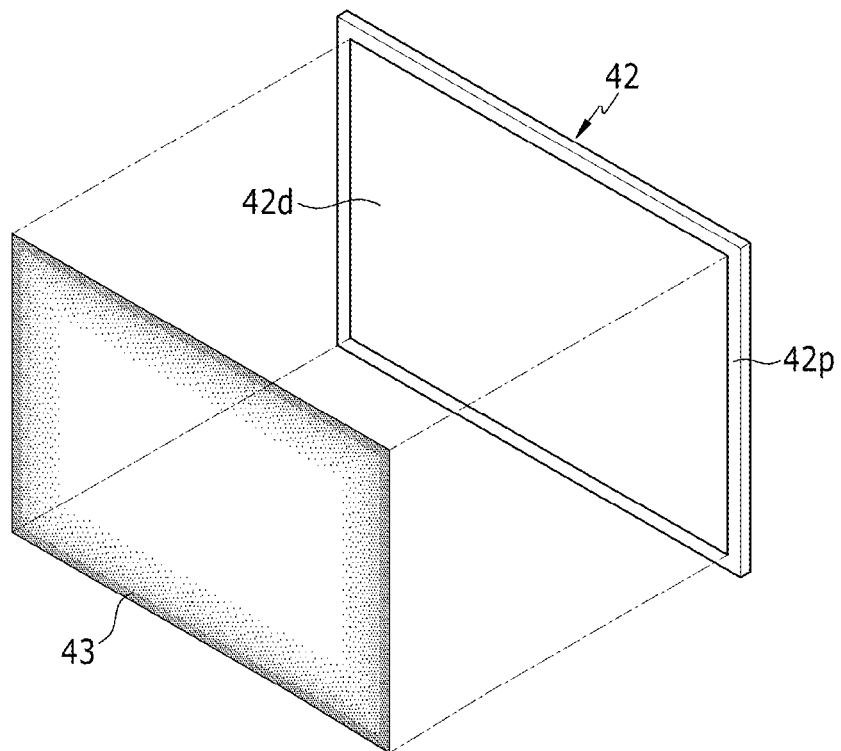


FIG. 6A

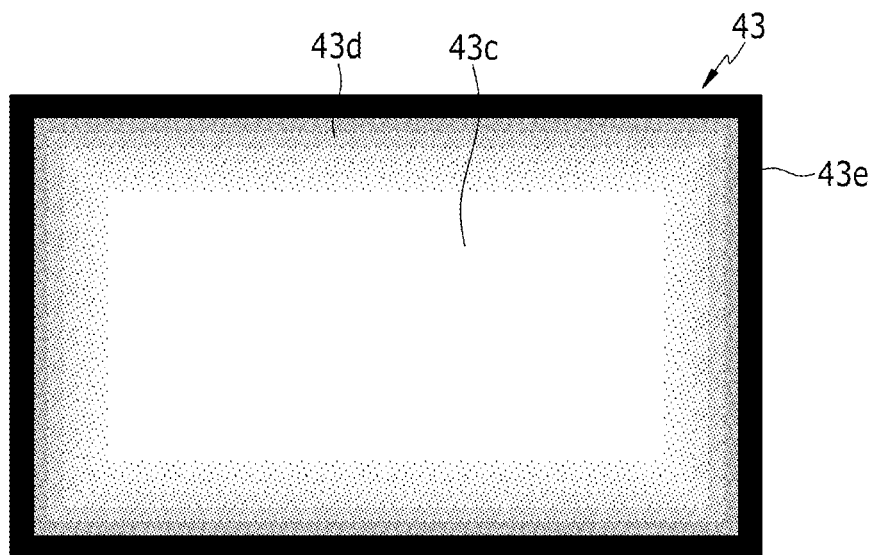


FIG. 6B

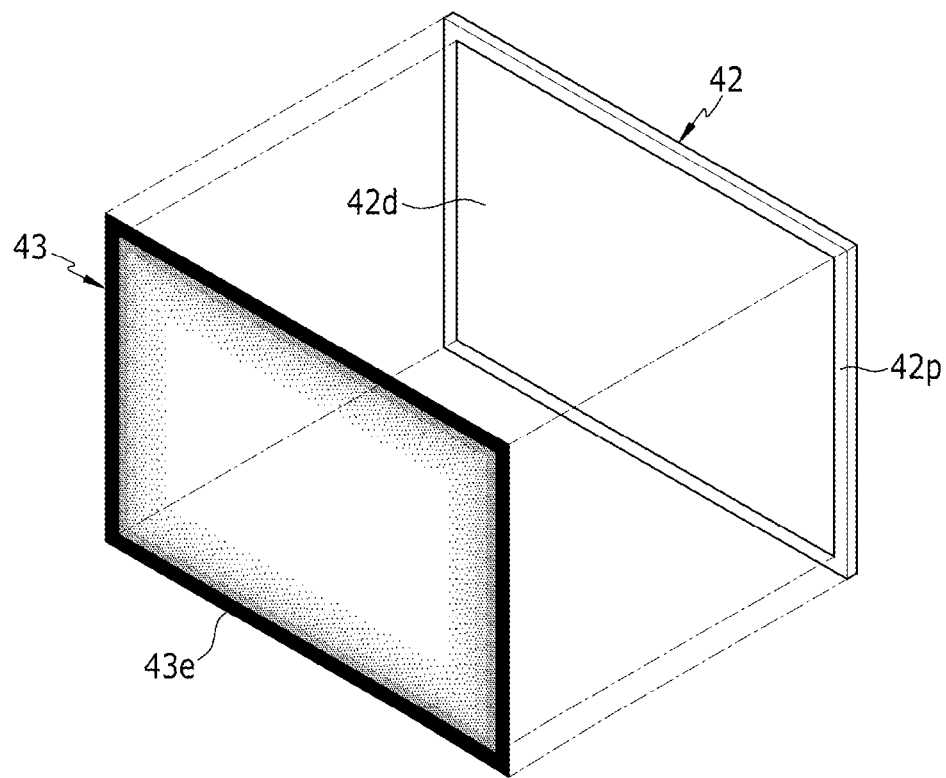


FIG. 7A

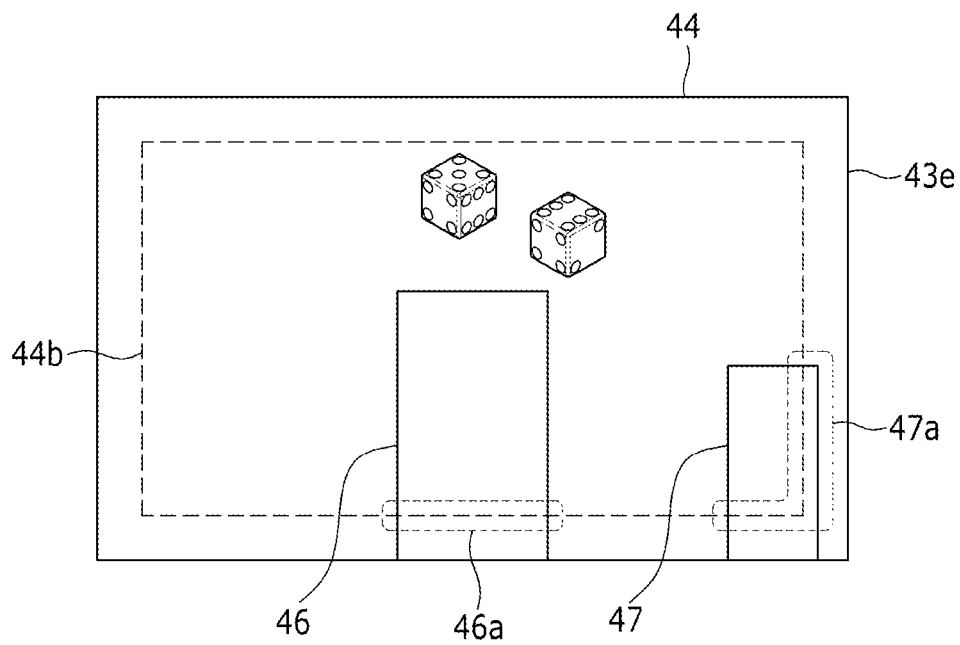


FIG. 7B

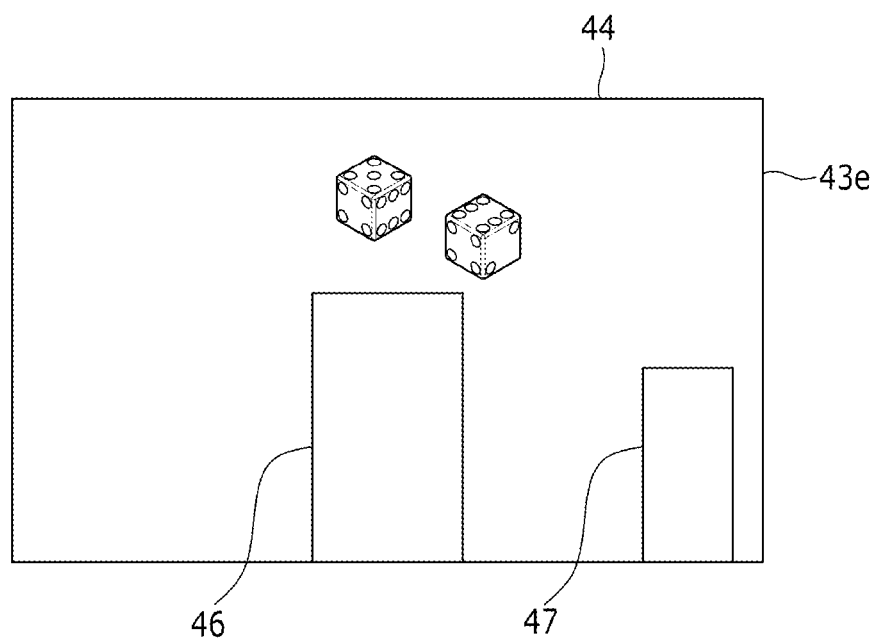


FIG. 8

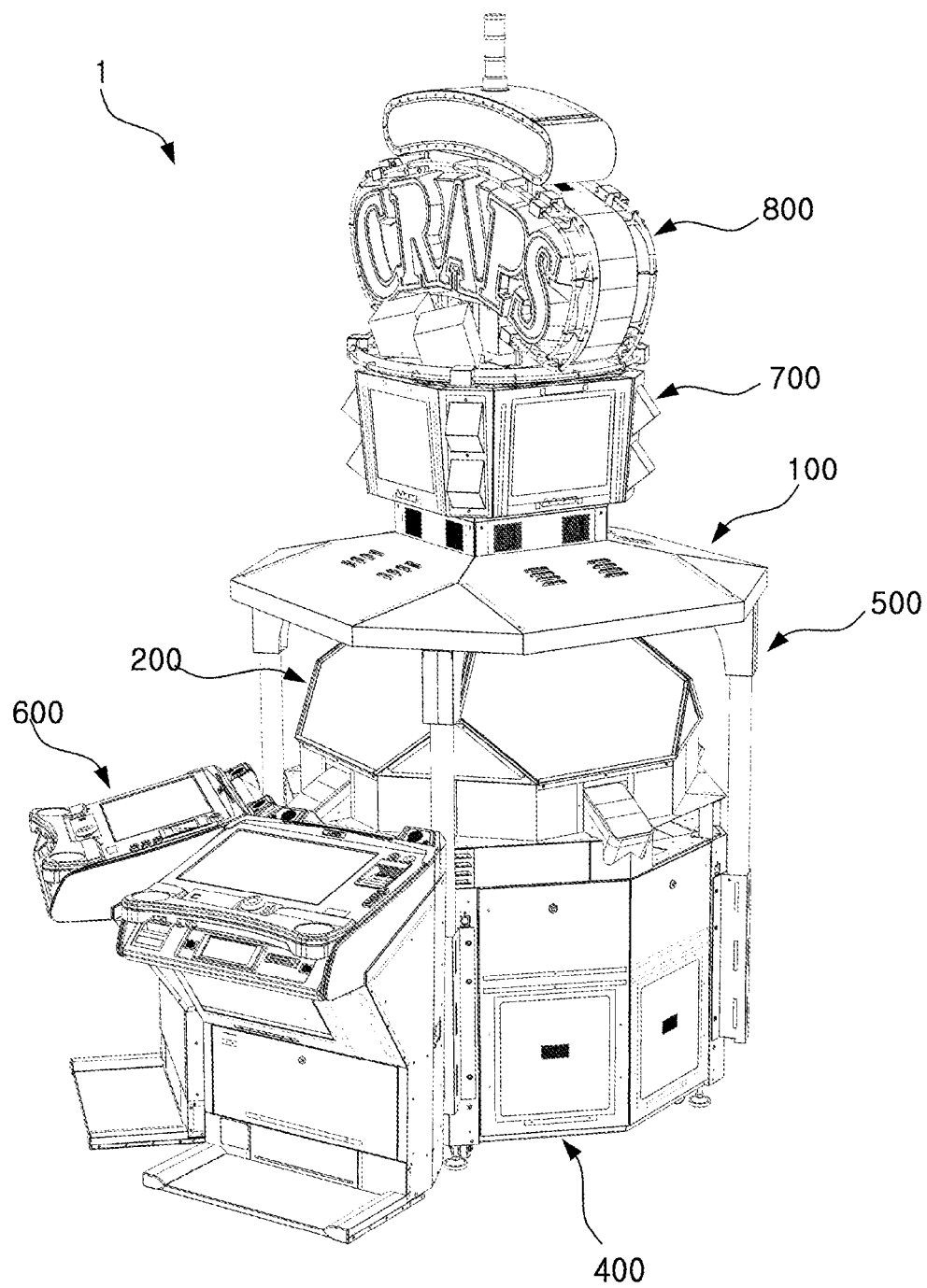


FIG. 9

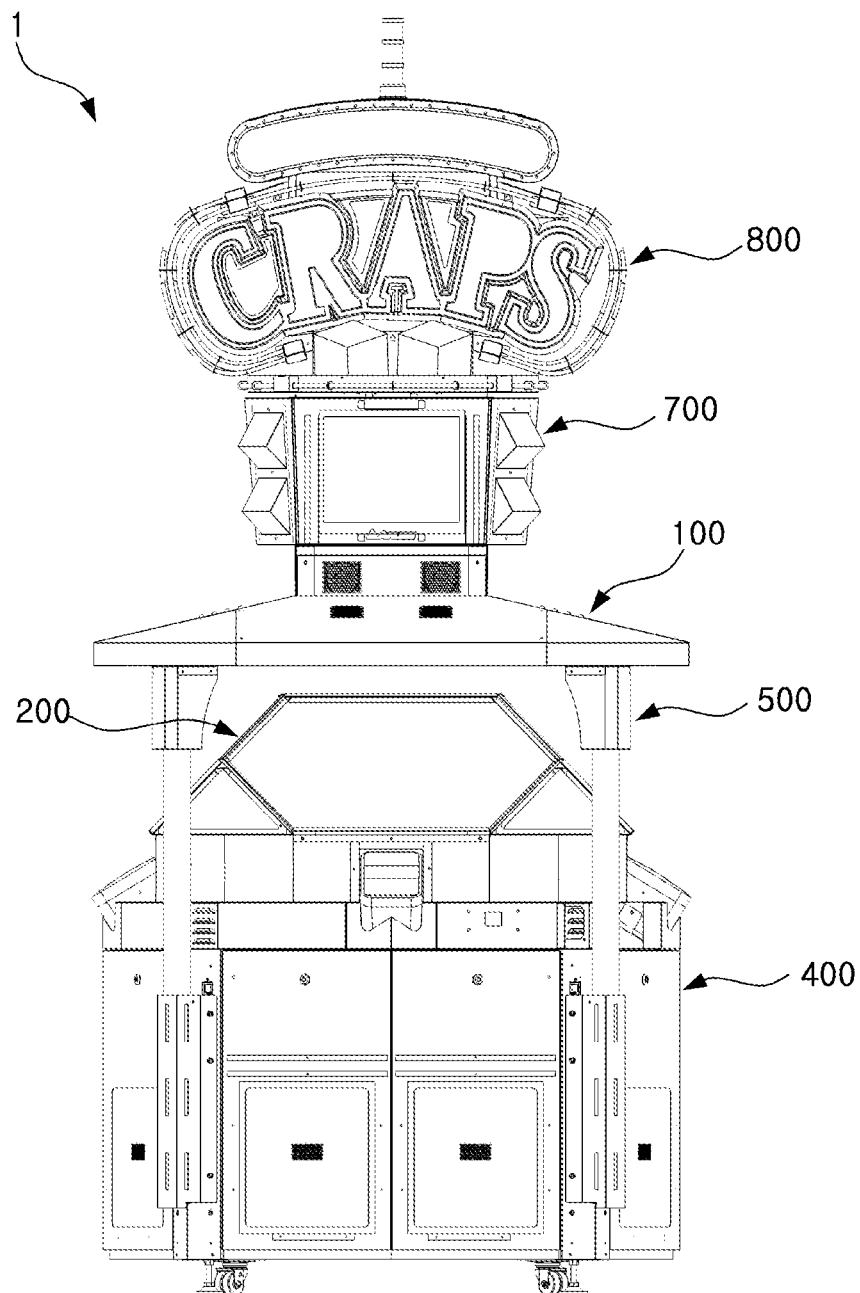


FIG.10

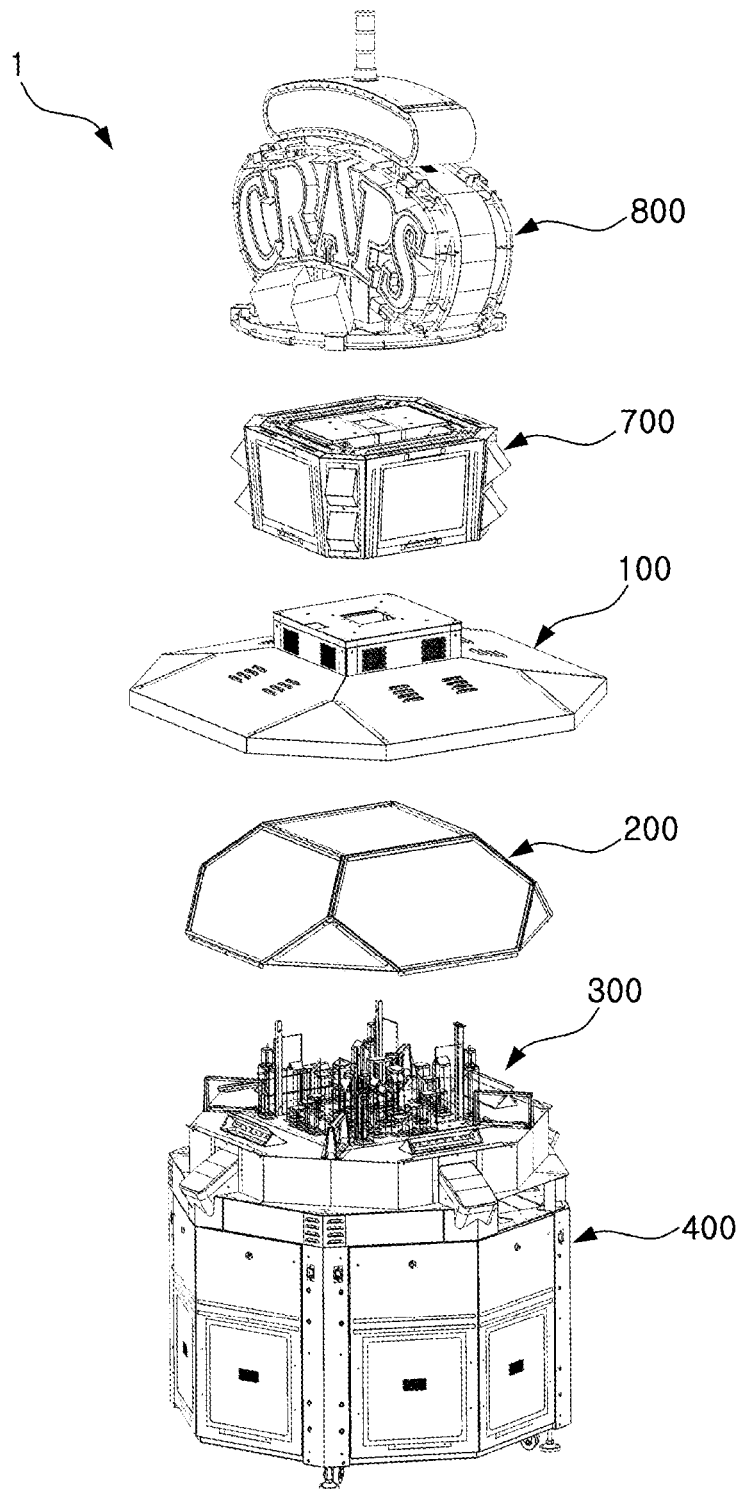


FIG.11

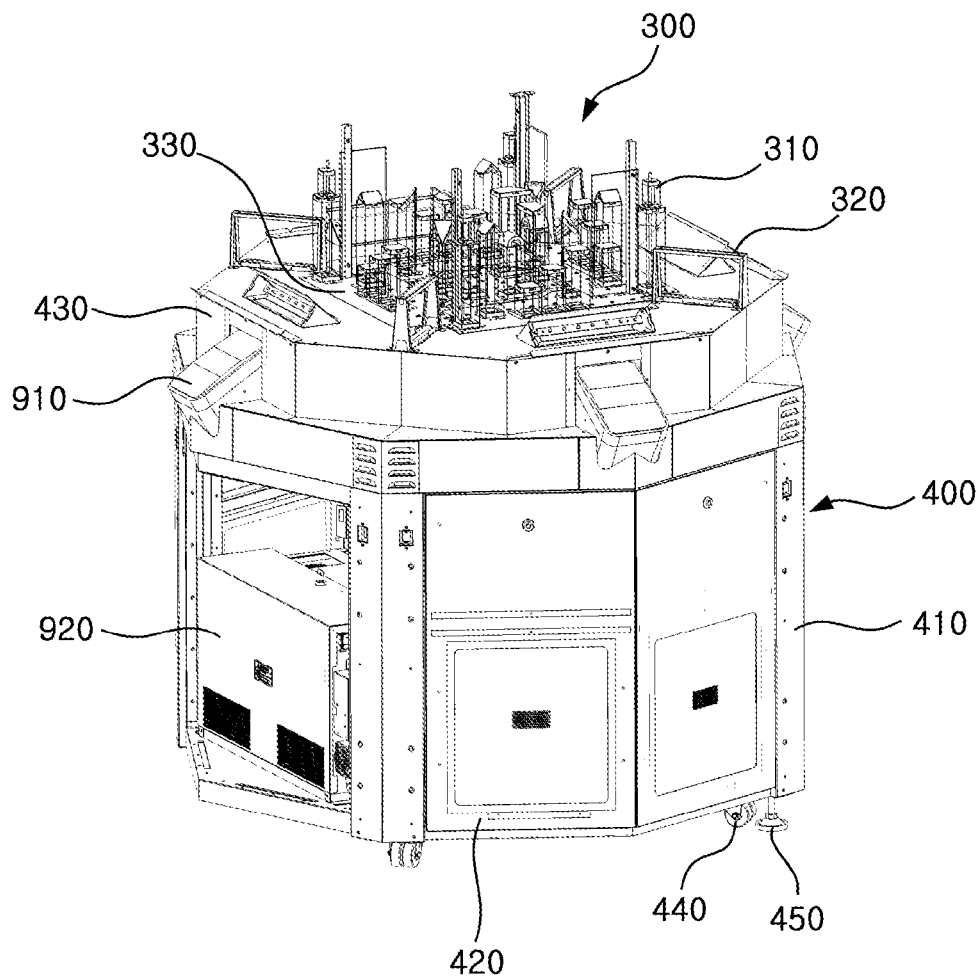


FIG.12

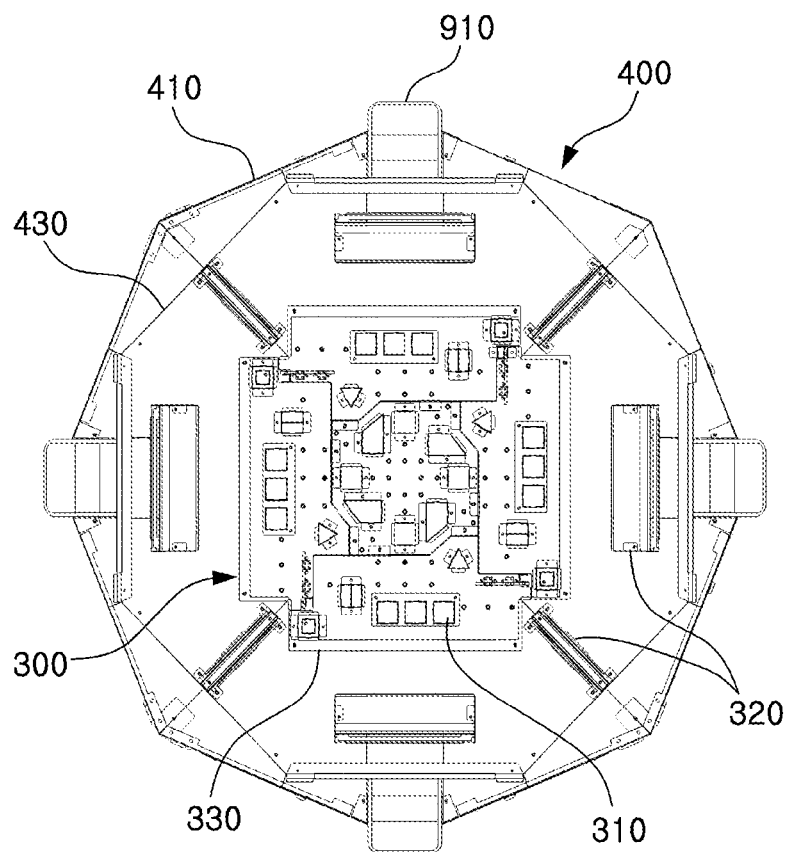


FIG.13

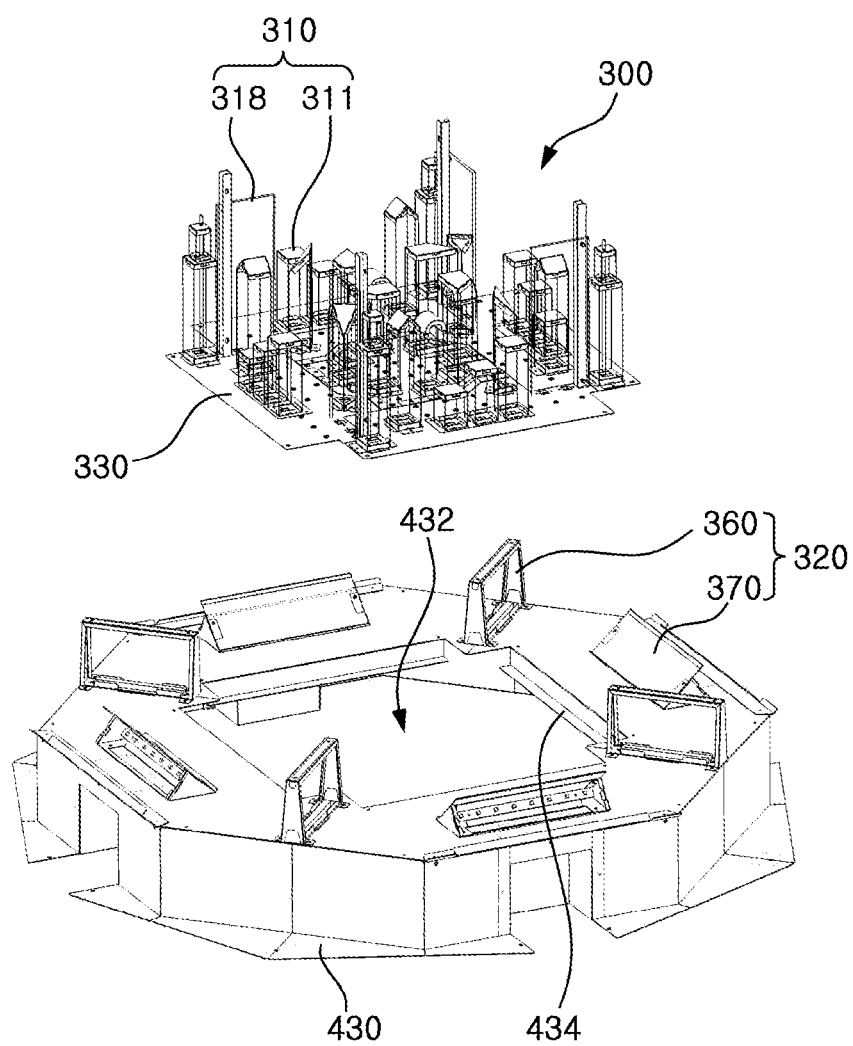


FIG.14

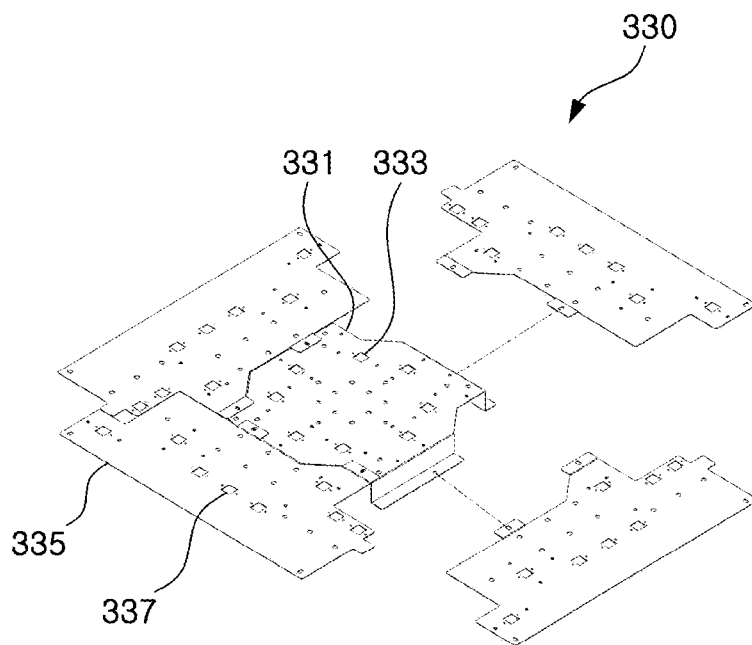


FIG. 15

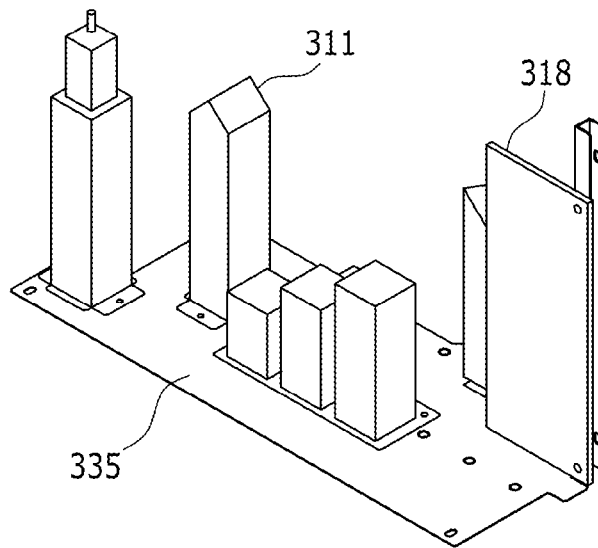


FIG. 16

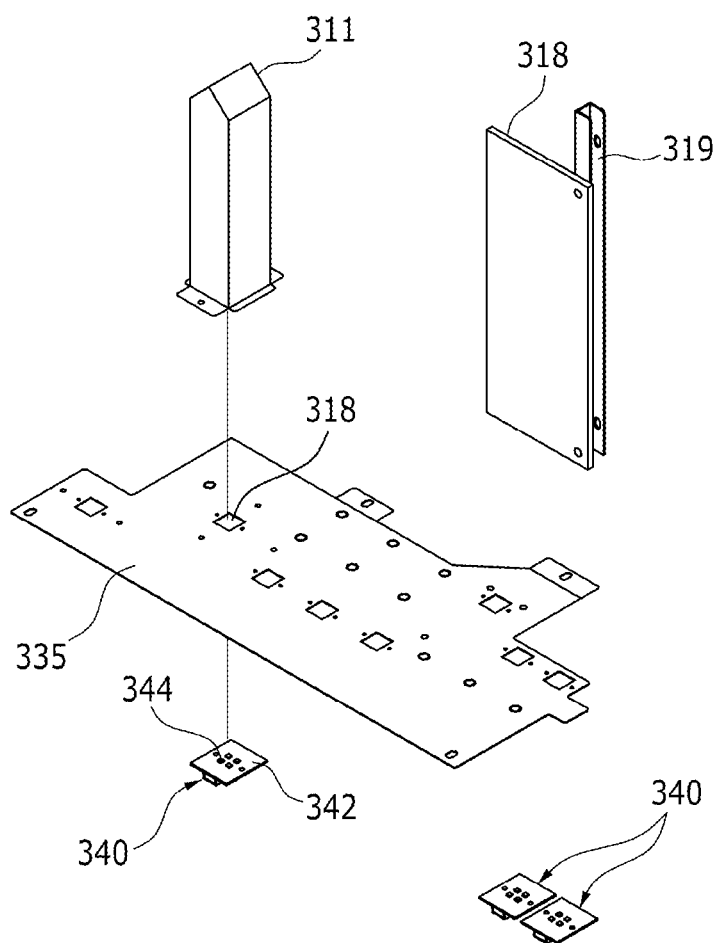


FIG. 17

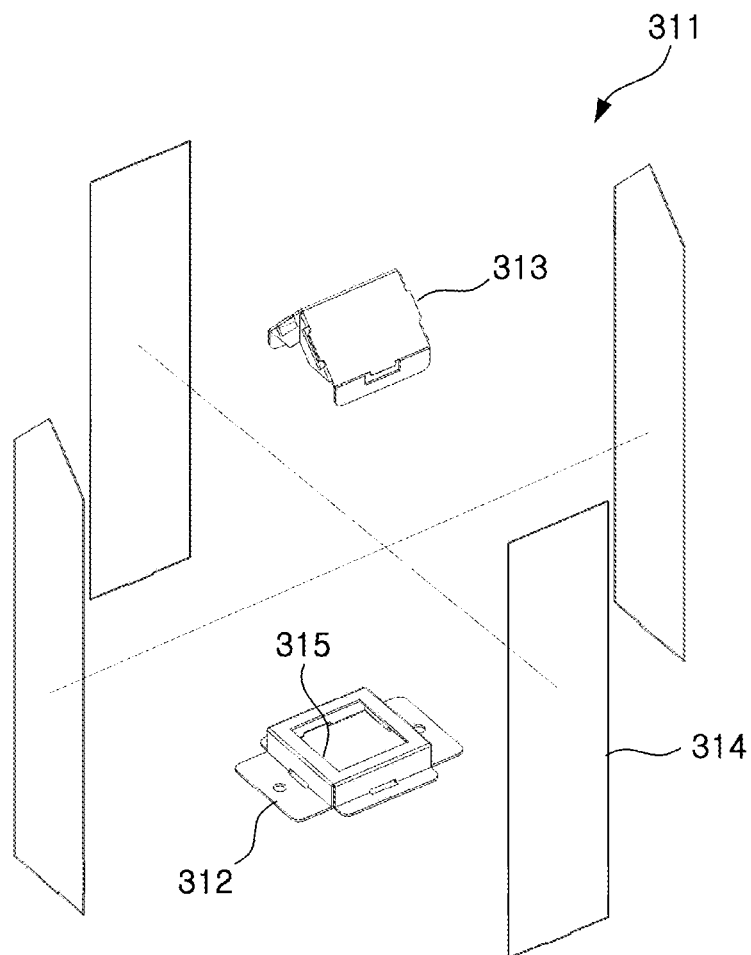


FIG.18

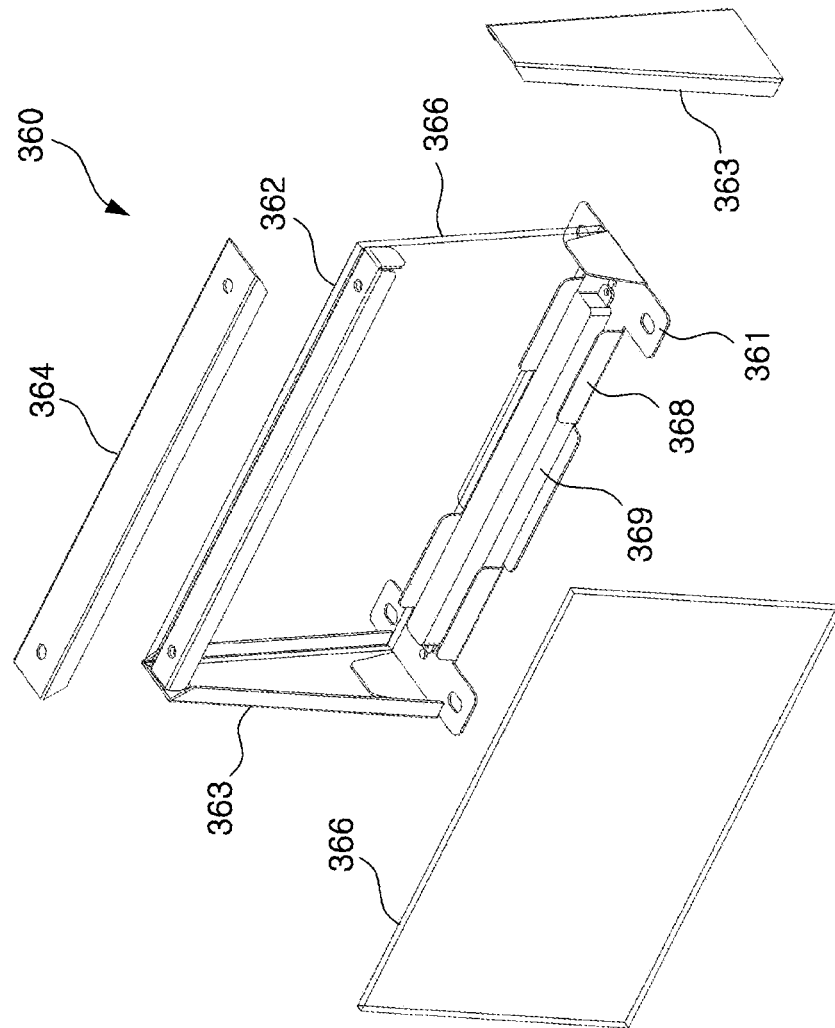


FIG. 19

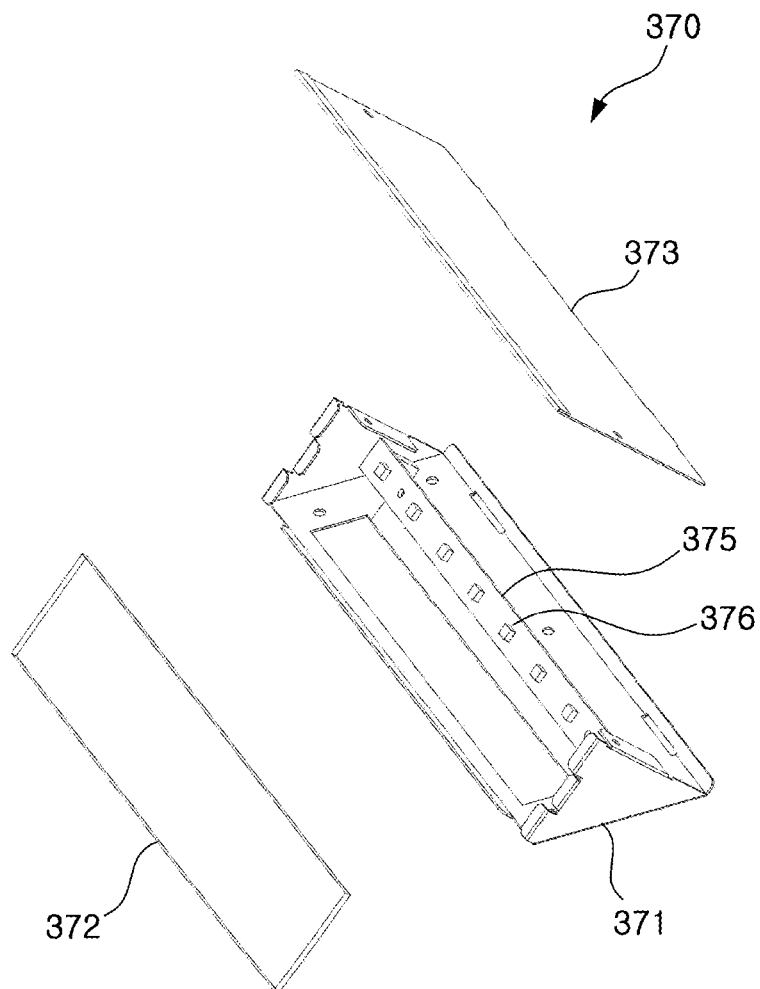


FIG. 20

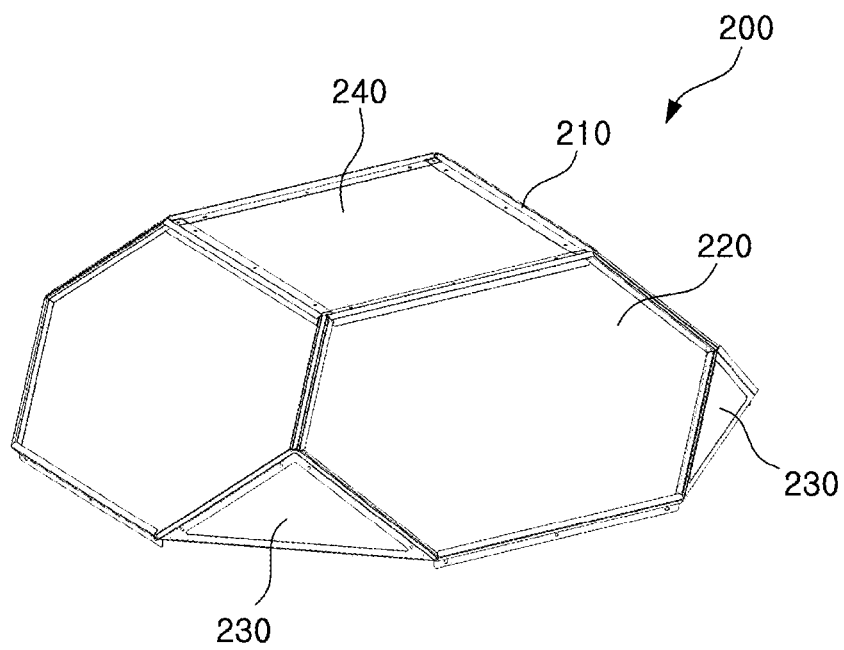


FIG.21

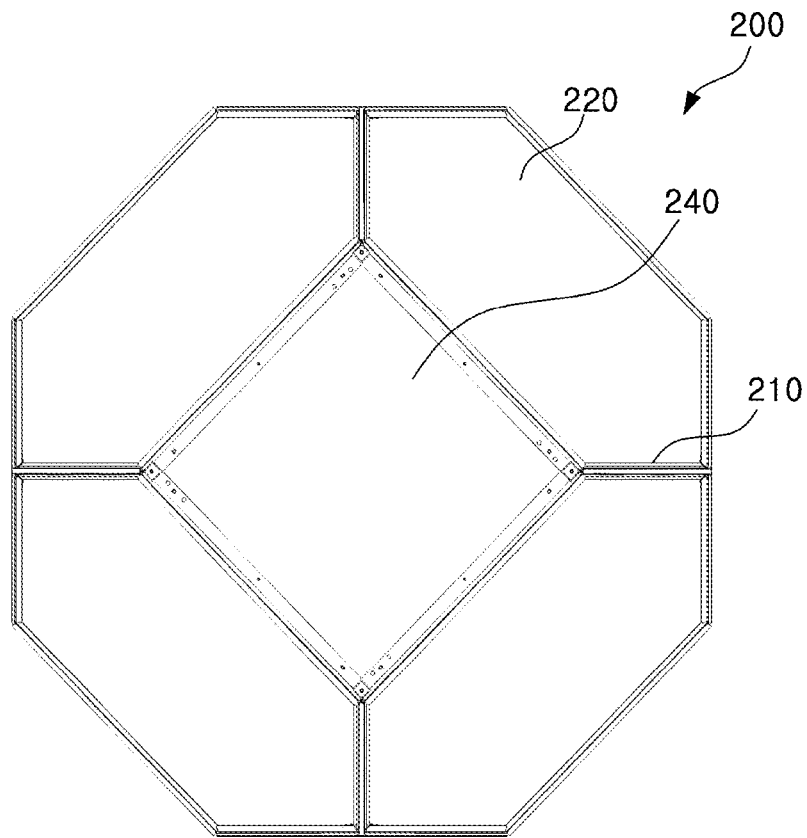


FIG. 22

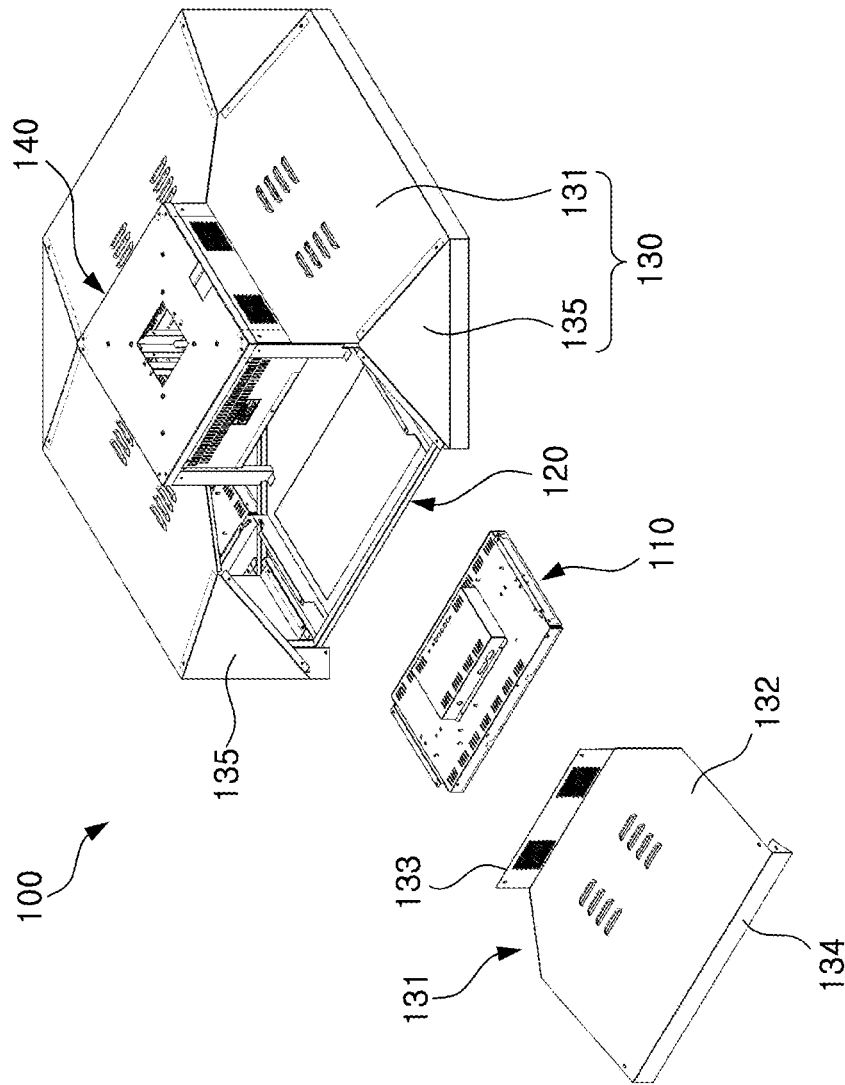


FIG.23

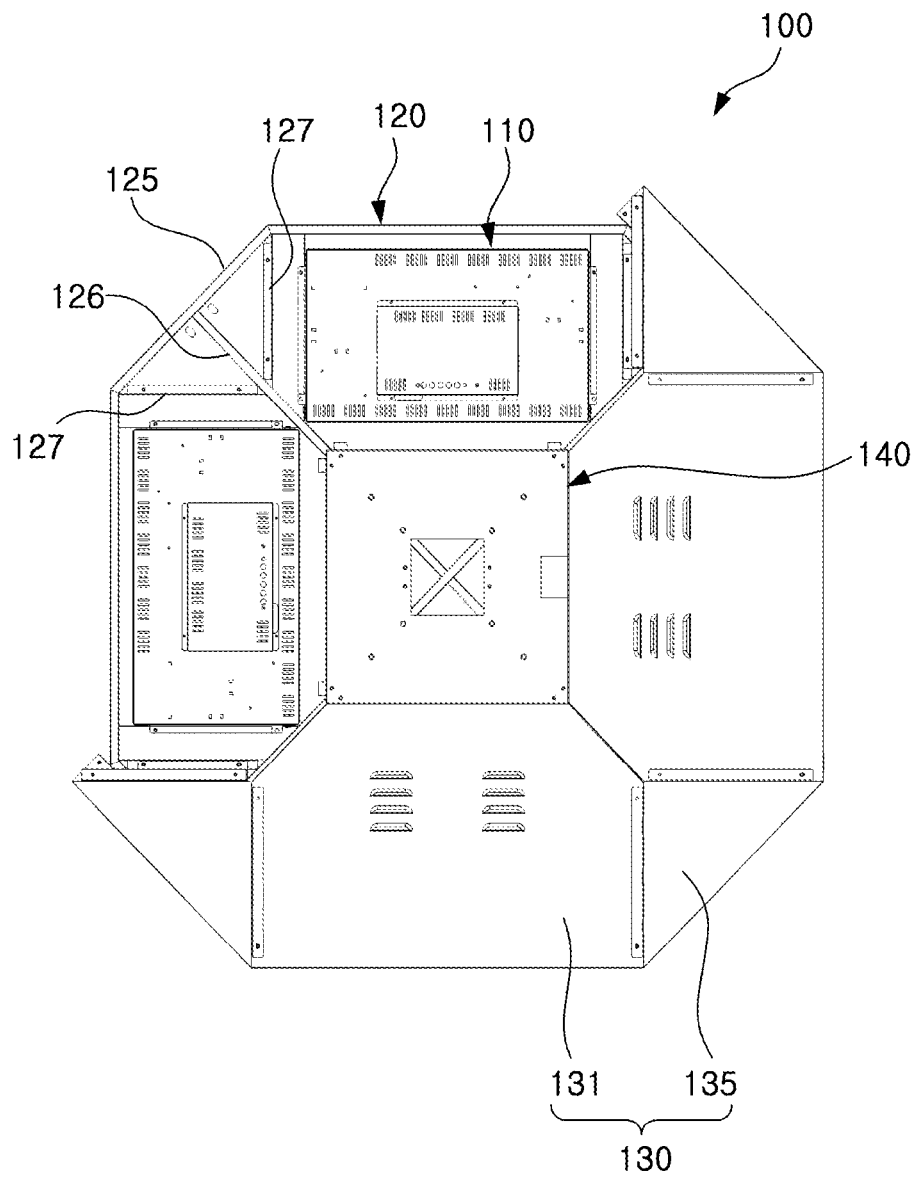


FIG.24

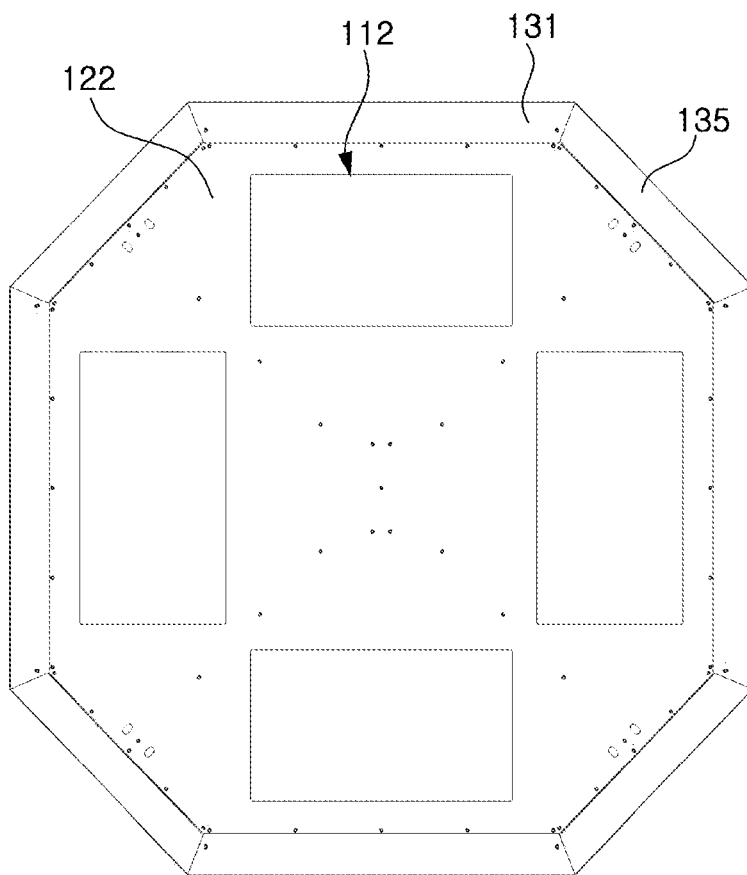


FIG.25

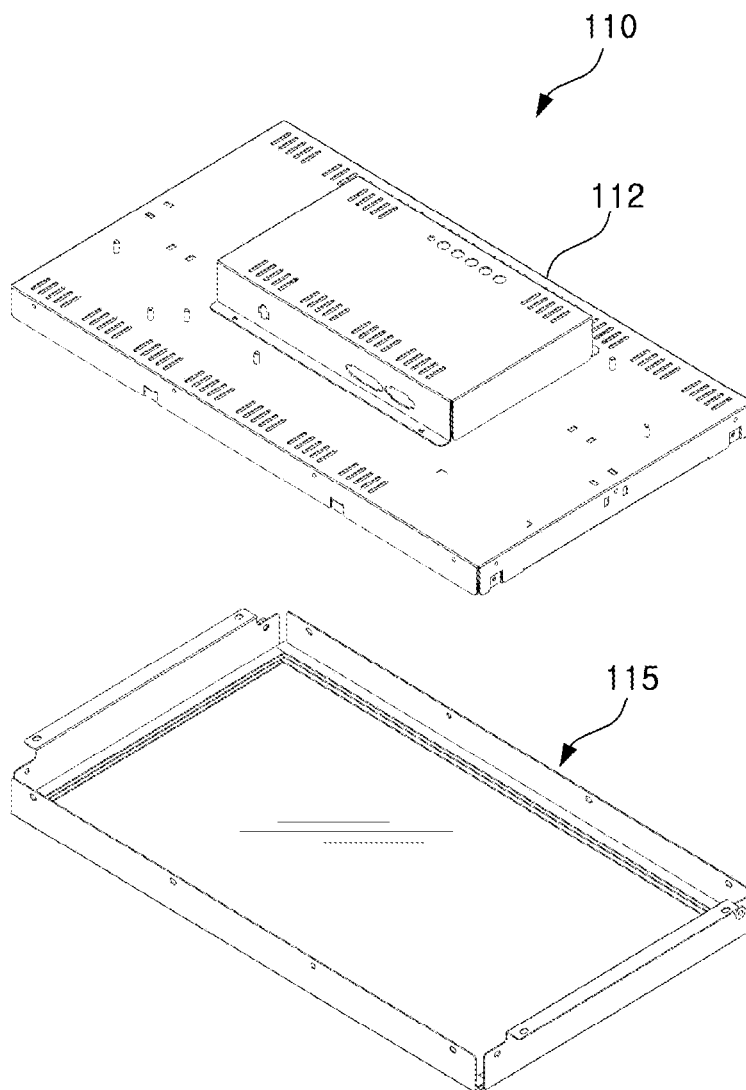


FIG.26

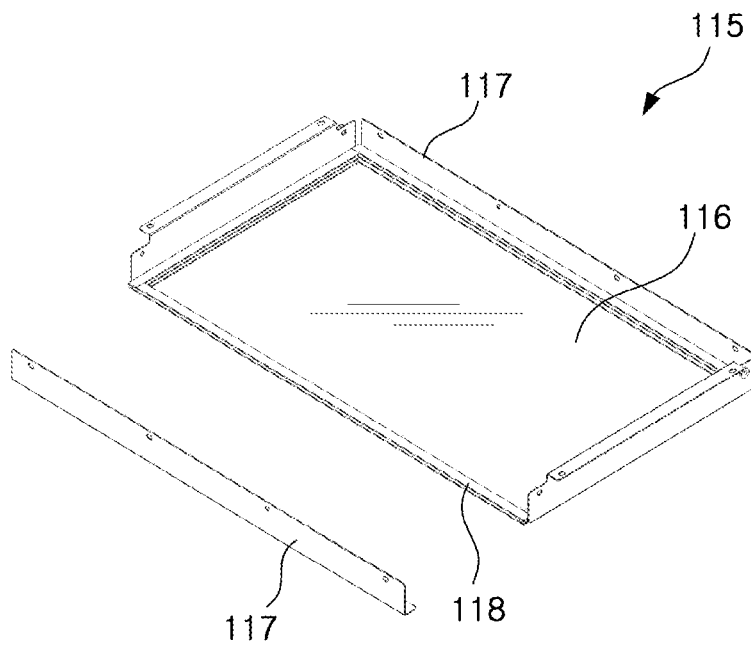


FIG.27

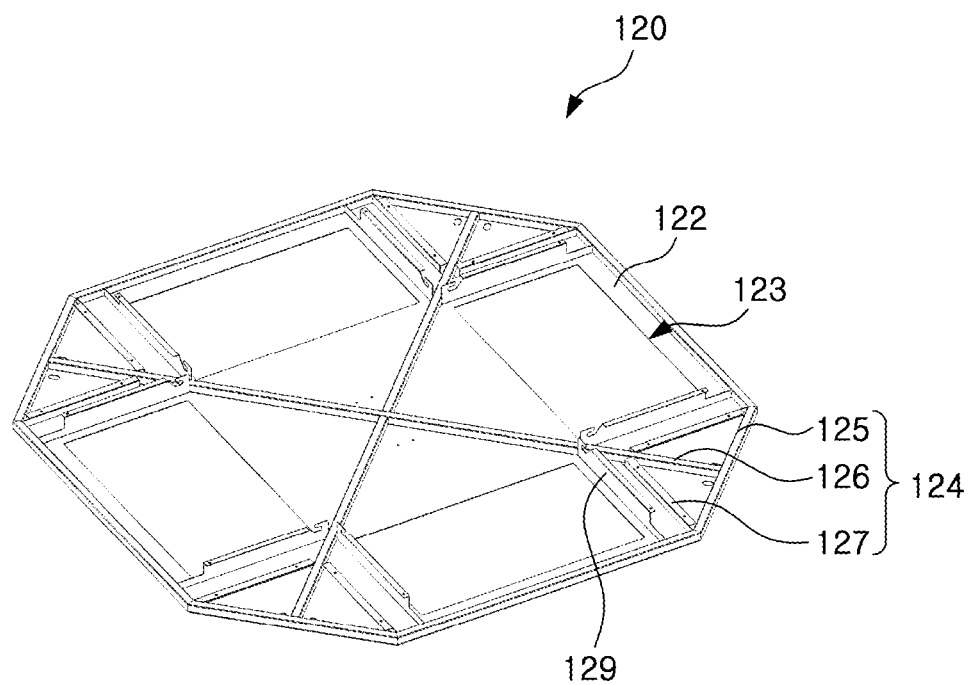


FIG.28

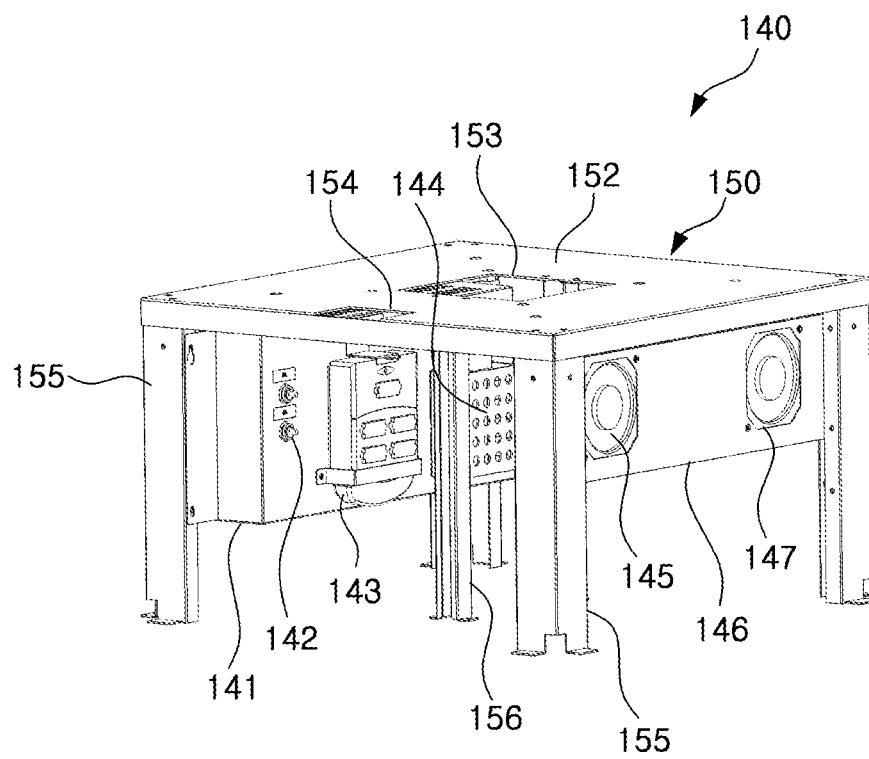


FIG.29

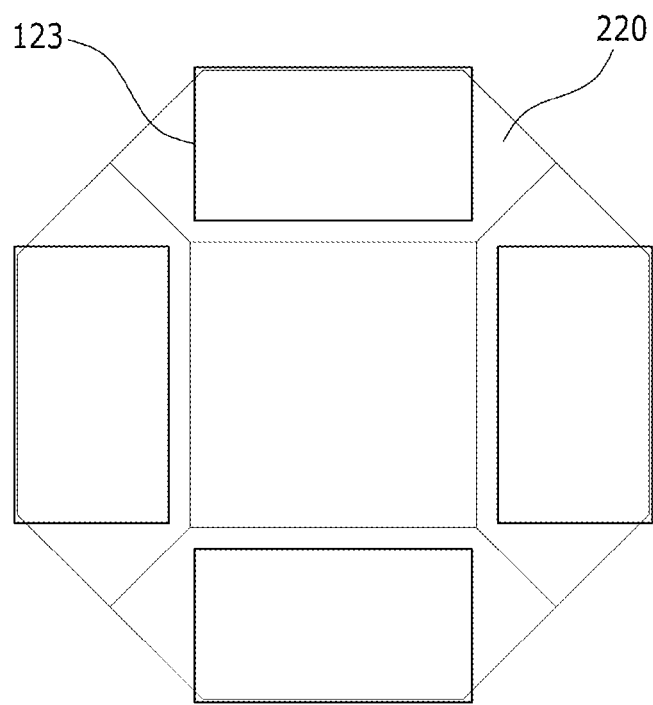


FIG.30

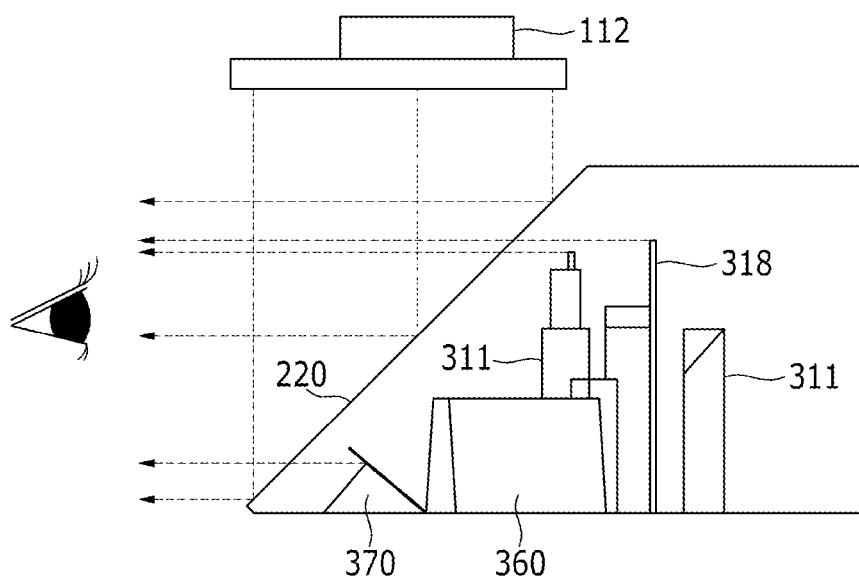


FIG.31

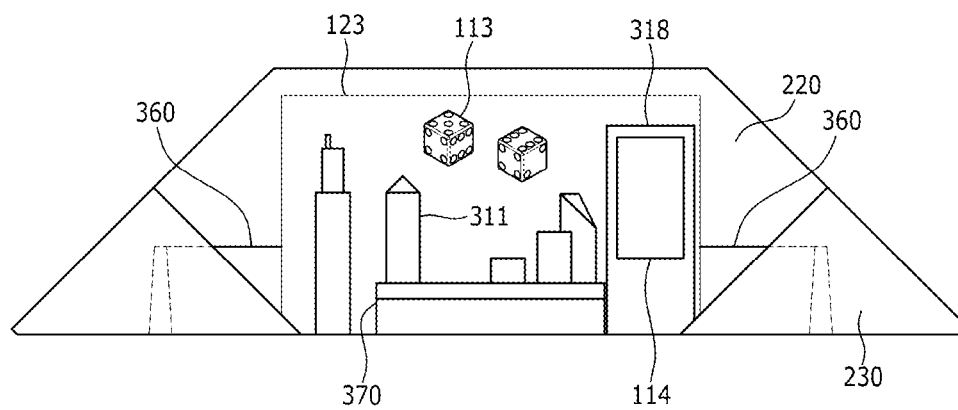


FIG.32

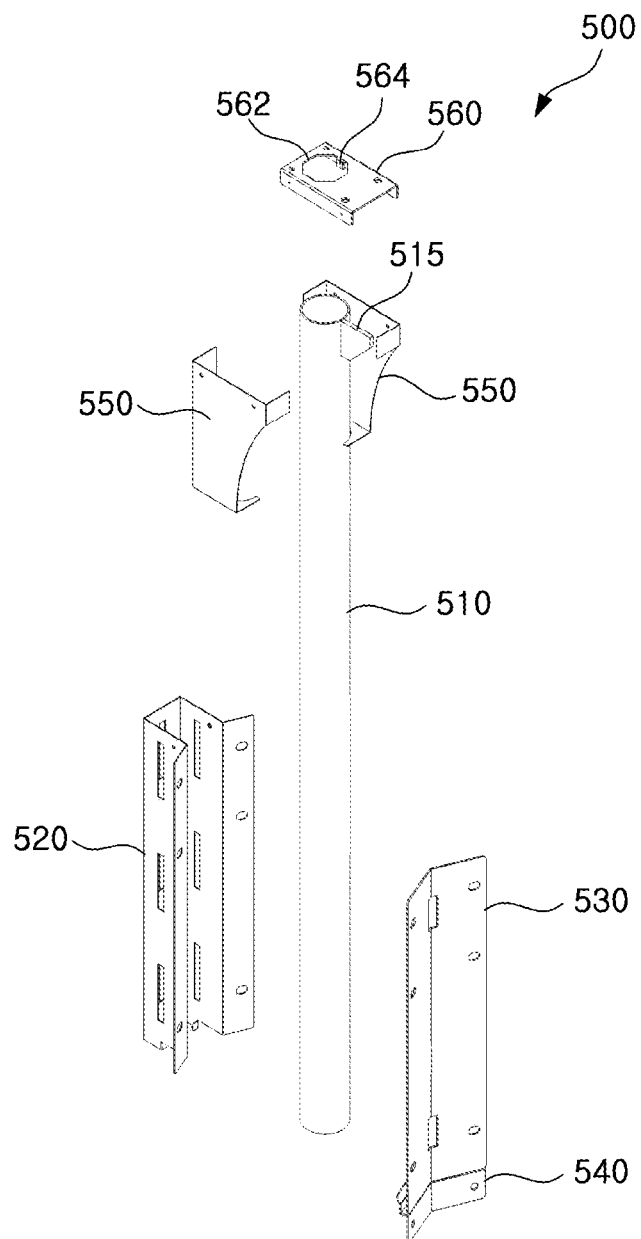


FIG.33

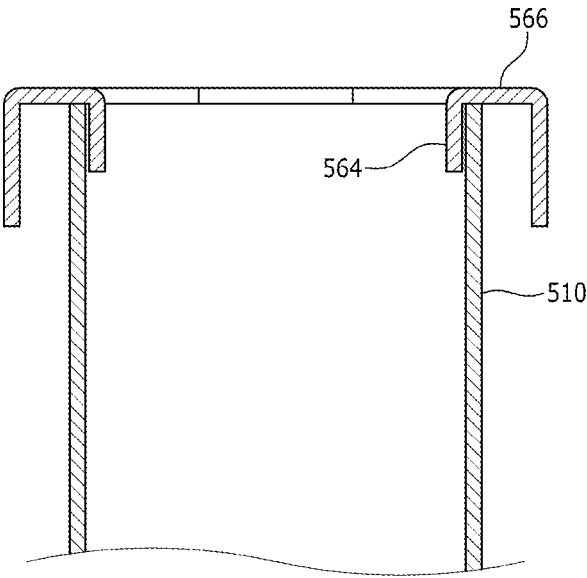


FIG.34

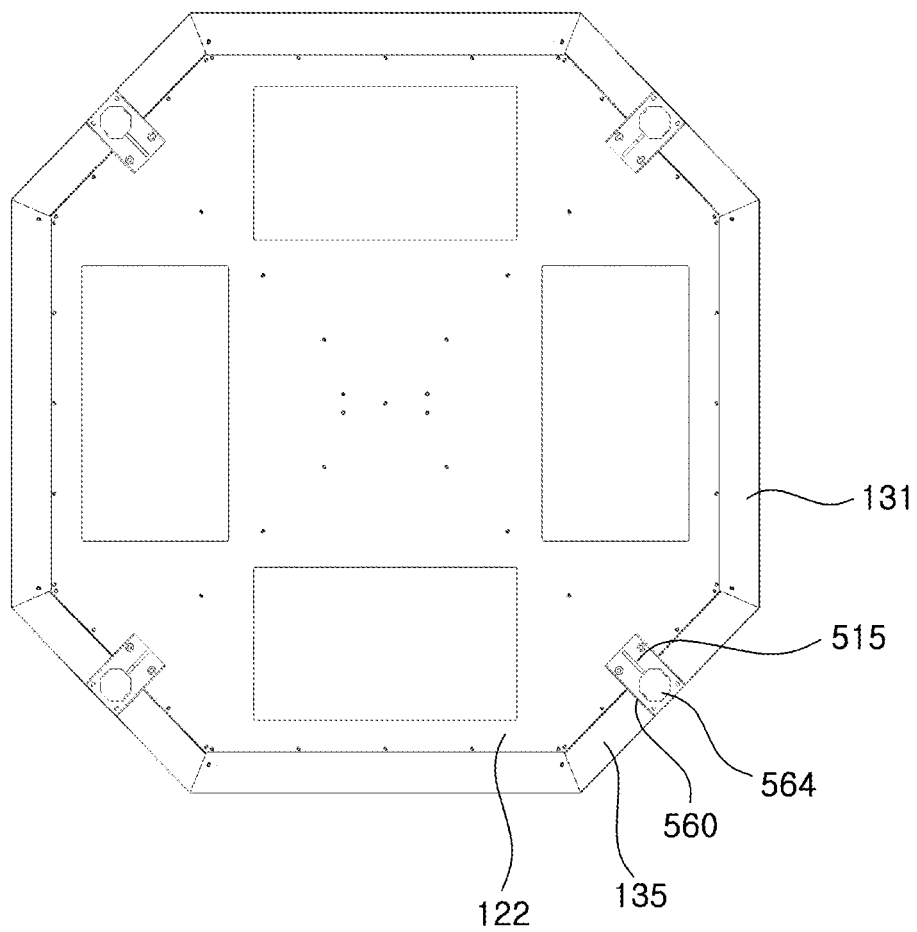


FIG.35

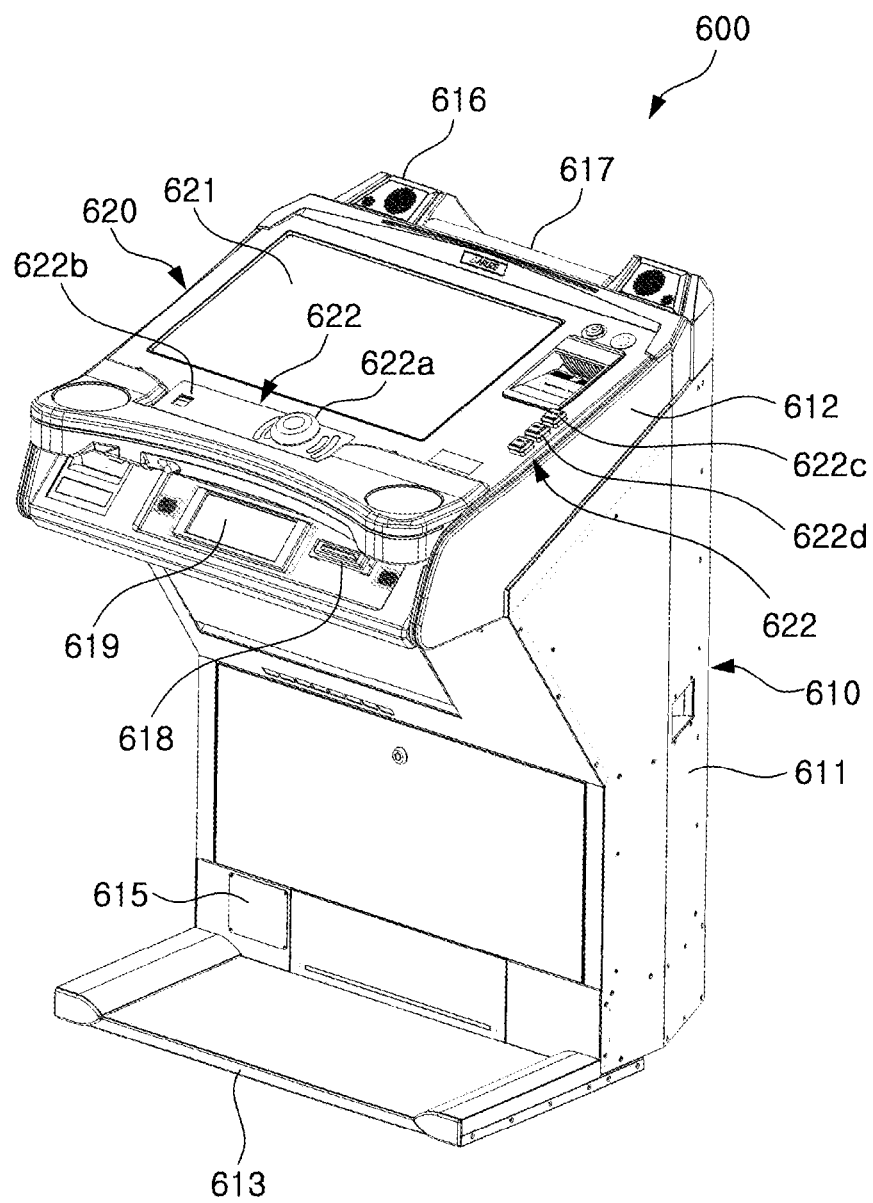


FIG.36

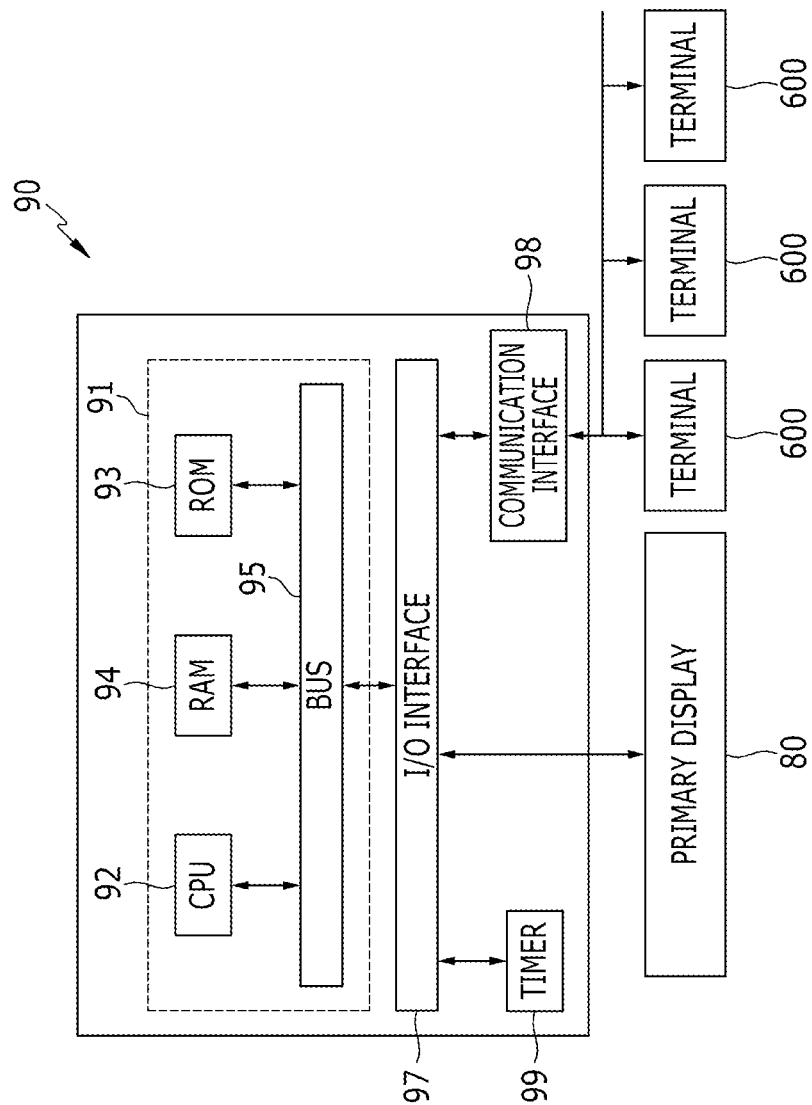


FIG. 37

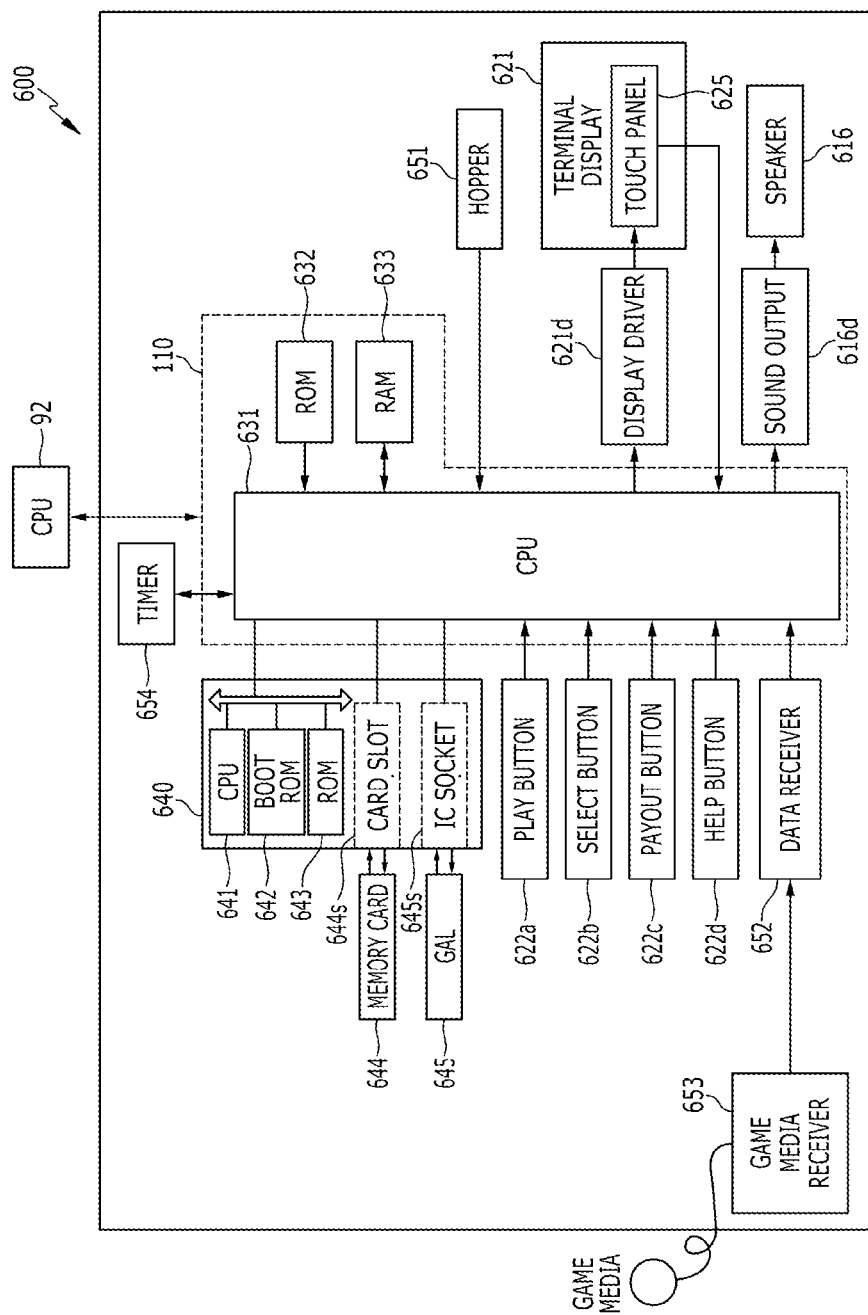


FIG.38

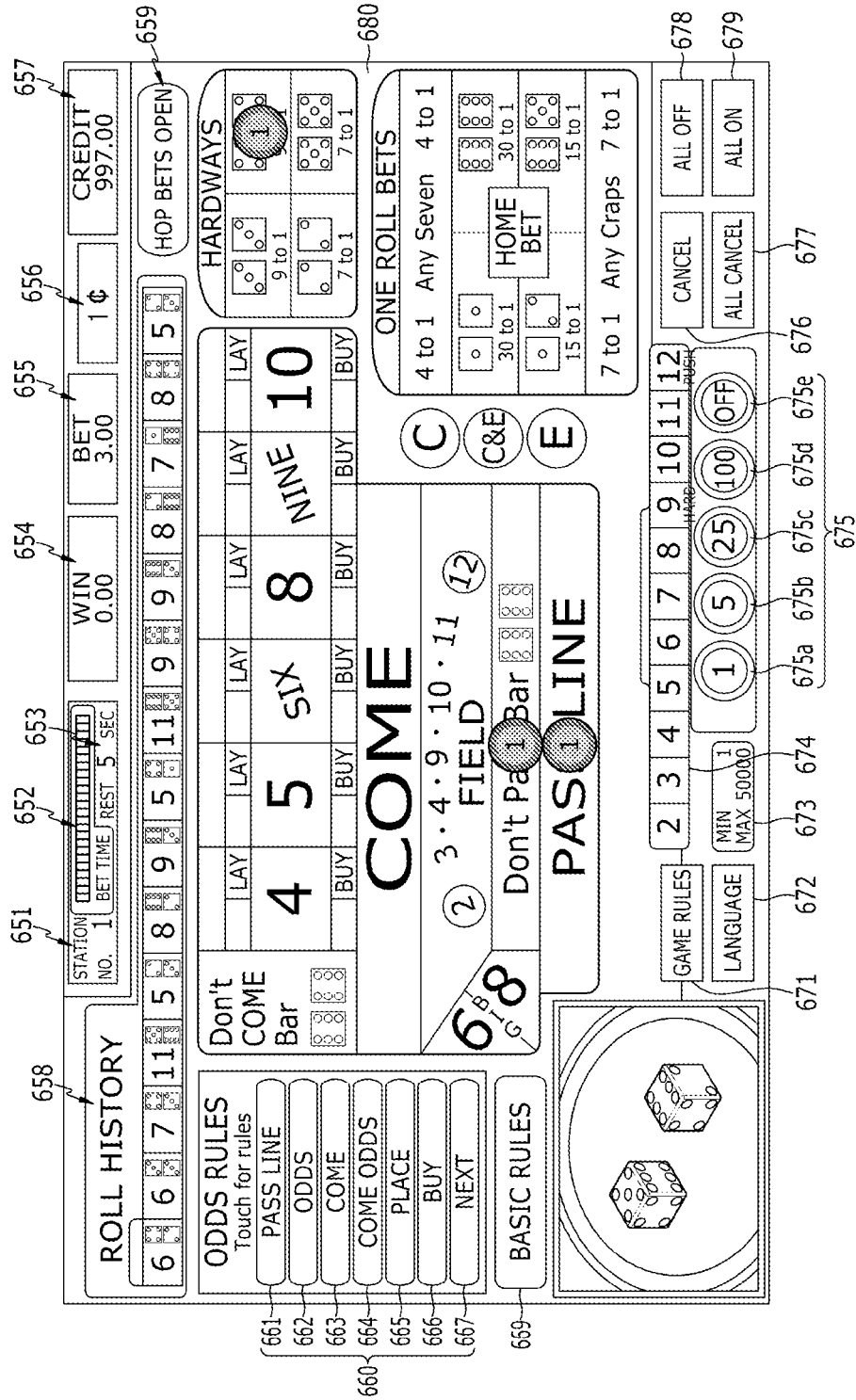


FIG. 39

ROLL HISTORY

STATION NO. 1 BET TIME REST 5 SEC

WIN 0.00 BET 3.00 CREDIT 997.00

ODDS RULES
Touch for rules

PASS LINE
ODDS
COME
PLACE
BUY
NEXT

BASIC RULES

HOP BETS
Touch the area you wish to bet

CLOSE

PASS LINE
Don't Pass Bar

HOP BETS

C&E
30 to 1
15 to 1

E
30 to 1
15 to 1

HOME BET
30 to 1
15 to 1

7 to 1 Any Craps 7 to 1

GAME RULES
YOU ARE THE SHOOTER

MIN 1 MAX 50000

1 5 25 100 OFF

CANCEL
ALL OFF

ALL CANCEL
ALL ON

690

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GAMING MACHINE

BACKGROUND

(a) Field

The present invention generally relates to a gaming machine.

(b) Description of the Related Art

Some of table games are hosted by a dealer or hosted by a computer in place of the dealer. A computer-hosting game may be played by a single player or a plurality of players connected via a network. Widely known multiplayer games may include craps, sic bo, roulette, for example. A craps game is disclosed in U.S. Patent Application Publication No. 2011/0092266, for example.

The craps or sic bo games may use physical dice or virtual dice that may be seen from a plurality of players. When using virtual dice, an image display may be used in displaying the virtual dice. However, the virtual dice displayed by the image display may not attract more than the physical dice.

SUMMARY

A gaming machine according to an embodiment of the present invention includes: a display panel configured to display images of a game, the display panel including a screen facing downward; a partial mirror disposed under the display panel and inclined with respect to the screen to partially reflect the images from the display panel into a forward direction; and a controller configured to execute the game and to control the display panel.

The gaming machine may further include a blocking member disposed in front of the display panel and extending downward from the display panel.

The gaming machine may further include a filter disposed on the screen of the display panel, wherein the filter may include a translucent area facing a peripheral area of the screen and partially transmitting light from the display device with a transmittance that increases from an outer edge of the translucent area to an inner edge of the translucent area.

The gaming machine may further include a plurality of player terminals connected to the controller.

The game may include one of craps, sic bo, and roulette.

A surface of the screen may be disposed on a horizontal plane.

The partial mirror may make an angle with the surface of the screen, the angle ranging from about 40 degrees to about 50 degrees.

A gaming machine according to an embodiment of the present invention includes: a display assembly including a plurality of display panels configured to display images of a game, each of the display panels including a screen facing downward; a mirror assembly disposed under the display panels and including a plurality of partial mirrors disposed inclined with respect to the screens to partially reflect the images from the display panels into a forward direction, the partial mirrors arranged along a loop such that rear surfaces of the partial mirrors face each other; and a controller configured to execute the game and to control the display panel.

The gaming machine may further include a blocking member disposed in front of the display panels and extending downward from the display panels.

The mirror assembly may have a shape of a polyhedral dome.

The mirror assembly may further include a plurality of brackets coupling the partial mirrors to each other.

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The display assembly may further include: a base plate configured to support the display panels and having a plurality of openings exposing the screens of the display panels; and a panel cover assembly configured to cover top surfaces of the display panels.

The gaming machine may further include a base support configured to support the mirror assembly.

The gaming machine may further include a post assembly coupled to the base support and the display assembly to support the display assembly.

The gaming machine may further include a plurality of player terminals connected to the controller.

The plurality of player terminals may be arranged such that at least two of the plurality of player terminals correspond to one of the partial mirrors.

The game may include one of craps, sic bo, and roulette.

The screens of the display panels may be disposed on a horizontal plane.

The partial mirrors make an angle with the screens, the angle ranging from about 40 degrees to about 50 degrees.

The display panels may be configured to display substantially the same images.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is a schematic perspective view of a display device for a gaming machine according to an embodiment of the present invention.

FIG. 1B is a schematic lateral view of the display device shown in FIG. 1A.

FIG. 1C illustrates an exemplary image on a mirror of the display device shown in FIG. 1A.

FIG. 2A is a schematic perspective view of a display device for a gaming machine according to an embodiment of the present invention.

FIG. 2B is a schematic lateral view of the display device shown in FIG. 2A.

FIG. 2C illustrates an exemplary image on a partial mirror of the display device shown in FIG. 2A.

FIG. 3 is a schematic perspective view of a display device for a gaming machine according to an embodiment of the present invention.

FIG. 4 is a schematic lateral view of a display device for a gaming machine according to an embodiment of the present invention.

FIG. 5A is a schematic plan view of a filter for a display device according to an embodiment of the present invention.

FIG. 5B is a schematic exploded view of the filter shown in FIG. 5A and a display panel for a display device.

FIG. 6A is a schematic plan view of a filter for a display device according to another embodiment of the present invention.

FIG. 6B is a schematic exploded view of the filter shown in FIG. 6A and a display panel for a display device.

FIG. 7A illustrates an exemplary image on a partial mirror of a display device without a filter.

FIG. 7B illustrates an exemplary image on a partial mirror of the display device shown in FIG. 4 to FIG. 6B.

FIG. 8 is a schematic perspective view of a gaming machine according to an embodiment of the present invention.

FIG. 9 is a schematic front view of the gaming machine shown in FIG. 8.

FIG. 10 is a schematic exploded view of the gaming machine shown in FIG. 8 except for post assemblies and player terminals.

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FIG. 11 is a schematic perspective view of the base support and the background assembly of the gaming machine shown in FIG. 8 to FIG. 10.

FIG. 12 is a schematic top view of the base support and the background assembly.

FIG. 13 is a schematic partially-exploded perspective view of a mirror support of the base support and the background assembly.

FIG. 14 is a schematic partially-exploded perspective view of base plates of the background assembly.

FIG. 15 is a schematic perspective view of a base plate and background members thereon.

FIG. 16 is a schematic exploded perspective view of a base plate, background members, and lighting members.

FIG. 17 is a schematic exploded perspective view of a miniature building.

FIG. 18 is a schematic partially-exploded perspective view of a double-sided sign.

FIG. 19 is a schematic partially-exploded perspective view of a single-sided sign.

FIG. 20 is a schematic perspective view of the mirror assembly of the gaming machine shown in FIG. 8 to FIG. 10.

FIG. 21 is a schematic top view of the mirror assembly shown in FIG. 20.

FIG. 22 is a schematic partially-exploded perspective view of the primary display assembly of the gaming machine shown in FIG. 8 to FIG. 10.

FIG. 23 is a schematic partially-exploded top view of the primary display assembly shown in FIG. 22.

FIG. 24 is a schematic bottom view of the primary display assembly shown in FIG. 22.

FIG. 25 is a schematic exploded perspective view of a display panel assembly of the primary display assembly shown in FIG. 22.

FIG. 26 is a schematic exploded perspective view of a protection of the display panel assembly shown in FIG. 25.

FIG. 27 is a schematic perspective view of a display support of the primary display assembly shown in FIG. 22.

FIG. 28 is a schematic perspective view of an electric circuit assembly of the primary display assembly shown in FIG. 22.

FIG. 29 is a top view of the mirror assembly shown in FIG. 8 to FIG. 10 and openings in a base plate of the display support shown in FIG. 27.

FIG. 30 and FIG. 31 illustrate operations of the gaming machine shown in FIG. 8 to FIG. 10.

FIG. 32 is a schematic exploded perspective view of the post assembly of the gaming machine shown in FIG. 8 to FIG. 10.

FIG. 33 is a schematic sectional view of a post and a top bracket in the post assembly shown in FIG. 32.

FIG. 34 is a schematic bottom view of portions of the post assembly and the primary display assembly.

FIG. 35 is a schematic perspective view of the player terminal of the gaming machine shown in FIG. 8 to FIG. 10.

FIG. 36 is a block diagram of a circuit configuration of the game machine shown in FIG. 8 to FIG. 10.

FIG. 37 is a block diagram of a circuit configuration of the player terminal of the game machine shown in FIG. 8 and FIG. 35.

FIG. 38 to FIG. 40 are schematic screen shots of the terminal display for a game of craps according to one embodiment of the present invention.

DETAILED DESCRIPTION

In the following detailed description, only certain embodiments of the present invention have been shown and

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described, simply by way of illustration. As those skilled in the art would realize, the described embodiments may be modified in various different ways, all without departing from the spirit or scope of the present invention. Accordingly, the drawings and description are to be regarded as illustrative in nature and not restrictive. Like reference numerals designate like elements throughout the specification.

A display device for a gaming machine according to an embodiment of the present invention is described with reference to FIG. 1A, FIG. 1B, and FIG. 1C.

FIG. 1A is a schematic perspective view of a display device for a gaming machine according to an embodiment of the present invention, FIG. 1B is a schematic lateral view of the display device shown in FIG. 1A, and FIG. 1C illustrates an exemplary image on a mirror of the display device shown in FIG. 1A.

Referring to FIG. 1A, a display device 10 for a gaming machine according to an embodiment of the present invention includes a display panel 12 and a mirror 14. The display device 20 may be used in a multiplayer gaming machine including a plurality of player terminals or stations. However, the display device 10 may be also used in a single-player gaming machine.

The display panel 12 may include a screen facing downward, and the screen of the display panel 12 may be disposed on a horizontal plane. The images may be related to a game that may be a multiplayer game, for example, craps, sic bo, or roulette. However, the game may be a single-player game. The display panel 12 may include a flat panel display, for example, a liquid crystal display or an organic light emitting display.

The mirror 14 is disposed inclined to the screen of the display panel 12. In detail, the mirror 14 has a front surface, which obliquely faces the screen surface of the display device 12, and a rear surface that is disposed opposite the front surface. An angle made by the mirror 14 and the screen surface of the display panel 12 may range from about 40 degrees to about 50 degrees, for example, about 45 degrees. The mirror 14 may partly or entirely overlap the screen of the display panel 12 when viewed from the top.

Referring to FIG. 1B, the mirror 14 is reflective or at least partially reflective such that the mirror 14 may reflect an image IM1 from the display panel 12. Therefore, referring to FIG. 1C, a player in front of the partial mirror 14 may see the image IM1 from the display panel 12. The player may feel as if the image IM1 is floating in the air, particularly when the mirror 14 is partially reflective, and the player may be surprised and amused by the image IM1.

The display panel 12, which is disposed at an upper portion of the display device 10, may not easily get caught since people may be more likely to look down than to look up in a gaming place such as a casino. On the contrary, when the display panel 12 is disposed at a lower portion of the display device 10 such that the screen of the display panel 12 face upward, and the mirror 14 is disposed such that a front surface of the mirror 14 obliquely faces the screen of the display panel 12, the player may easily come across the display panel 12.

A display device for a gaming machine according to another embodiment of the present invention is described with reference to FIG. 2A, FIG. 2B, and FIG. 2C.

FIG. 2A is a schematic perspective view of a display device for a gaming machine according to an embodiment of the present invention, FIG. 2B is a schematic lateral view of the display device shown in FIG. 2A, and FIG. 2C illustrates an exemplary image on a partial mirror of the display device shown in FIG. 2A.

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Referring to FIG. 2A, a display device 20 for a gaming machine according to another embodiment of the present invention includes a display panel 22, a partial mirror 24, and a background member 26. The display panel 22 faces down to display images downward, the partial mirror 24 is disposed inclined to the display panel 22, and the background member 26 is disposed behind the partial mirror 24.

Referring to FIG. 2B, the partial mirror 24 may partially reflect and partially transmit incident light such that the partial mirror 24 partially reflect an image IM2 from the display panel 22 and partially transmit an image IM3 of the background member 26. Therefore, referring to FIG. 2C, a player in front of the partial mirror 24 may see a combination of the image IM2 from the display panel 22 and the image IM3 of the background member 26. The player may feel as if the image IM2 is floating in front of the image IM3, and the player may be further surprised and amused by the combined image. FIG. 2C shows that a pair of dice images as an example of the image IM2 are floating in front of a building as an example of the image IM3.

The background member 26 is disposed at the rear of the partial mirror 24 such that the background member 26 obliquely faces the rear surface of the partial mirror 24. The background member 26 may include a miniature landscape, for example, a miniature nightscape of Las Vegas. The background member 26 may further include a lighting that may illuminate the miniature or may be included in the miniature so that the player can see the miniature. However, the brightness of the lighting may not be too high for the player to see the image IM2 from the display device 22. The lighting may include a light emitting diode (LED), for example.

The display device 20 may further include a support 28 that supports the partial mirror 24 and the background member 26.

Other structures of the display device 20 may be substantially the same as the display device 10 described above with reference to FIG. 1A to FIG. 1C.

Like the display device 10 shown in FIG. 1A to FIG. 1C, the display panel 22, which is disposed at an upper portion of the display device 20, may not easily get caught compared with an example where the display panel 22 is disposed at a lower portion of the display device 20 such that the screen of the display panel 22 face upward, and the mirror 24 is disposed such that a front surface of the mirror 24 obliquely faces the screen of the display panel 22.

In addition, the display device 20 including the top display panel 22 may have a smaller size than a comparative example where the display panel 22 is disposed at a lower portion of the display device 20 such that the screen of the display panel 22 face upward, and the mirror 24 is disposed such that a front surface of the mirror 24 obliquely faces the screen of the display panel 22. In the comparative example, the partial mirror 24 may lean toward a player with a lower edge of the partial mirror 24 being disposed in front of the background member 26, and the display panel 22 may be disposed in front of the background member 26. Therefore, in a top view, a total area may be equal to or greater than a sum of an area occupied by the display panel 22 and an area occupied by the background member 26. In this embodiment, the partial mirror 24 leans toward the background member 26 to overlap the background member 26, and thus the area occupied by the display panel 22 may overlap the area occupied by the background member 26 as shown in FIG. 2B. Therefore, in a top view, a total area may be smaller than a sum of an area occupied by the display panel 22 and an area occupied by the background member 26. Accordingly, the size of the display device 20 according to this embodiment may be reduced.

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A display device for a gaming machine according to another embodiment of the present invention is described with reference to FIG. 3.

FIG. 3 is a schematic perspective view of a display device for a gaming machine according to an embodiment of the present invention.

Referring to FIG. 3, a display device 30 for a gaming machine according to another embodiment of the present invention includes a display panel 32, a partial mirror 34, a background member 36, and a blocking member 33. The display panel 32 faces down to display images downward, the partial mirror 34 is disposed inclined to the display panel 32, and the background member 36 is disposed behind the partial mirror 34.

The blocking member 33 is disposed in front of the display panel 32, and may extend downward from the display panel 32. Although FIG. 3 shows that the blocking member 33 extends obliquely downward, the blocking member 33 may extend vertically downward. The blocking member 33 may block a player to see the display panel 32.

The display device 30 may further include a support 38 that supports the partial mirror 34 and the background member 36.

Other structures of the display device 30 may be substantially the same as the display device 20 described above with reference to FIG. 2A to FIG. 2C.

A display device for a gaming machine according to embodiments of the present invention is described with reference to FIG. 4 to FIG. 7B.

FIG. 4 is a schematic lateral view of a display device for a gaming machine according to an embodiment of the present invention, FIG. 5A is a schematic plan view of a filter for a display device according to an embodiment of the present invention, FIG. 5B is a schematic exploded view of the filter shown in FIG. 5A and a display panel for a display device, FIG. 6A is a schematic plan view of a filter for a display device according to another embodiment of the present invention, FIG. 6B is a schematic exploded view of the filter shown in FIG. 6A and a display panel for a display device, FIG. 7A illustrates an exemplary image on a partial mirror of a display device without a filter, and FIG. 7B illustrates an exemplary image on a partial mirror of the display device shown in FIG. 4 to FIG. 6B.

Referring to FIG. 4, a display device 40 for a gaming machine according to another embodiment of the present invention includes a display panel 42, a partial mirror 44, background members 46 and 47, and a support 48. The display panel 42 faces down to display images downward, and the partial mirror 44 is disposed inclined to the display panel 42, and the background members 46 and 47 are disposed behind the partial mirror 44.

The display device 40 further includes a filter 43 disposed on the display panel 42.

According to an embodiment of the present invention, referring to FIG. 5A, the filter 43 may have a transparent area 43a and a translucent area 43b. The transparent area 43a of the filter 43 may occupy a most portion of an entire area of the filter 43, and may be disposed around a center of the filter 43. The translucent area 43b of the filter 43 may surround the transparent area 43a, and may be disposed near edges of the filter 43. The transparent area 43a of the filter 43 may fully transmit incident light, and the translucent area 43b of the filter 43 may partially transmit the incident light such that the transmittance of the incident light in the translucent area 43b may gradually increase from an edge of the filter 43 toward the central area 43a of the filter 43.

According to an embodiment of the present invention, referring to FIG. 5B, the display panel 42 may have a display

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area (or screen area) **42d** displaying images and a peripheral area **42p** surrounding the display area **42d**. The filter **43** may match with the display area **42d** of the display panel **42**, for example, edges of the filter **43** may be aligned with edges of the display area **42d** of the display panel **42**.

According to another embodiment of the present invention, referring to FIG. 6A, the filter **43** may have a transparent area **43c**, a translucent area **43d**, and an opaque area **43e**. The transparent area **43c** of the filter **43** may occupy a most portion of an entire area of the filter **43**, and may be disposed around a center of the filter **43**. The translucent area **43d** of the filter **43** may surround the transparent area **43c** like a band, and the opaque area **43e** of the filter **43** may surround the translucent area **43d** and may be disposed near edges of the filter **43**. The transparent area **43c** of the filter **43** may fully transmit incident light, and the opaque area **43e** of the filter **43** may fully block incident light. The translucent area **43d** of the filter **43** may partially transmit the incident light such that the transmittance of the incident light in the translucent area **43d** may gradually increase from the opaque area **43e** to the central area **43a** of the filter **43**.

Referring to FIG. 6B, the filter **43** may match with an entire area of the display panel **42**, and the opaque area **43e** of the filter **43** may match with a peripheral area **42p** of the display panel **42** such that inner boundaries of the opaque area **43e** of the filter **43** may be aligned with inner boundaries of the peripheral area **42p** of the display panel **42**.

As described above, the filter **43** has the translucent area **43b** or **43d** having the light transmittance gradually decreasing as goes toward the edges of the filter **43**, and thus the filter **43** may cause images from the display panel **42** to be darker as goes toward the edges of the display panel **42** such that the edges of the display panel **42** may not be easily perceived.

For example, referring to FIG. 7A, if the display device **40** does not include the filter **43**, the luminance of light, which is emitted from the display panel **42** and reflected by the partial mirror **44**, may abruptly change near positions **44b** corresponding to boundaries of the display area **42d** of the display panel **42**. Therefore, a player may recognize the presence of the display **42**. Furthermore, the light near the boundary positions **44b** may make images of the background members **46** and **47** be blurred as if portions **46a** and **47a** of the background members **46** and **47** near the boundary positions **44b** were fogbound.

However, referring to FIG. 7B, the filter **43** may make the light luminance gradually change near positions **44b** corresponding to the boundaries of the display area **42d** of the display panel **42**, and thus a player may not easily perceive the display panel **42**. Moreover, the portions **46a** and **47a** of the background members **46** and **47** near the boundary positions **44b** may be relatively clear since corresponding portions of the images from the display panel **42** is significantly blocked and thus relatively feeble.

Other structures of the display device **40** may be substantially the same as the display device **20** described above with reference to FIG. 2A to FIG. 2C. In addition, the display device **40** may further include the blocking member **13** described above with reference to FIG. 3.

A gaming machine according to an embodiment of the present invention is described with reference to FIG. 8 to FIG. 40.

First, an overall structure of the gaming machine is outlined with reference to FIG. 8 to FIG. 10.

FIG. 8 is a schematic perspective view of a gaming machine according to an embodiment of the present invention, FIG. 9 is a schematic front view of the gaming machine

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shown in FIG. 8, and FIG. 10 is a schematic exploded view of the gaming machine shown in FIG. 8 except for post assemblies and player terminals.

Referring to FIG. 8, a gaming machine **1** according to an embodiment of the present invention includes a primary display assembly **100**, a mirror assembly **200**, a background assembly **300**, a base support **400**, a plurality of post assemblies **500**, a plurality of player terminals **600**, a secondary display assembly **700**, and a top sign **800**. The background assembly **300** is disposed on the base support **400** and covered by the mirror assembly **200** including partial mirrors. The post assemblies **500** are fixed to the base support **400** and support the primary display assembly **100** that includes display panels having downward screens. The secondary display assembly **700** including a plurality of image display panels is disposed on the primary display assembly **100**, and the top sign **800** is disposed on the secondary display assembly **700**. Although the top sign **800** figures shows craps as an example of a game, the game is not limited to the craps. For example, the game may be sic bo or roulette.

A player may play a game using one of the player terminals **600** while looking at images on one of the partial mirrors of the mirror assembly **200**. Some of the images may be reflected by the one of the partial mirrors after illuminated by one of the display panels and the others of the images may be images of the background assembly **300** after being transmitted through the one of the partial mirrors.

A structure of the base support **400** and the background assembly **300** of the gaming machine **1** is described in detail with reference to FIG. 11 to FIG. 19 as well as FIG. 8 to FIG. 10.

FIG. 11 is a schematic perspective view of the base support and the background assembly of the gaming machine shown in FIG. 8 to FIG. 10, FIG. 12 is a schematic top view of the base support and the background assembly, FIG. 13 is a schematic partially-exploded perspective view of a mirror support of the base support and the background assembly, FIG. 14 is a schematic partially-exploded perspective view of base plates of the background assembly, FIG. 15 is a schematic perspective view of a base plate and background members thereon, FIG. 16 is a schematic exploded perspective view of a base plate, background members, and lighting members, FIG. 17 is a schematic exploded perspective view of a miniature building, FIG. 18 is a schematic partially-exploded perspective view of a double-sided sign, and FIG. 19 is a schematic partially-exploded perspective view of a single-sided sign.

Referring to FIG. 11 and FIG. 12, the base support **400** includes a main frame **410**, a plurality of doors **420**, a mirror support **430**, and a plurality of casters **440**, and a plurality of adjusters **450**.

The main frame **410** may have a shape of a polygonal column, and each of the plurality of doors **420** are provided at a corresponding one of lateral surfaces of the main frame **410**. FIG. 11 and FIG. 12 show a regular octagonal column having eight lateral surfaces as an example of the main frame **410**, and eight doors **420** provided at respective lateral surfaces. The main frame **410** may have an internal space, and a control box **910** is disposed in the internal space of the main frame **410**.

The mirror support **430** is disposed on the main frame **410**, and may have a shape of a polygonal column, for example, a regular octagonal column like the main frame **410**. Referring to FIG. 12, the mirror support **430** is smaller than the main frame **410**, and the mirror support **430** and the main frame **410** are arranged such that the vertices of the octagon of the mirror support **430** are disposed near midpoints of edges of the

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octagon of the main frame **410**. The height of the mirror support **430** and/or the height of the main frame **410** may be adjusted so that a player may enjoy playing a game with a comfortable posture and without noticing the downward screens of the primary display assembly **100**.

Referring to FIG. **13**, the mirror support **430** has a center hole **432** and a plurality of supporting portions **434** around the center hole **432**. The center hole **432** may have a shape of a square with concave corners, and the supporting portions may extend along edges of the square.

Referring to FIG. **11** and FIG. **12** again, the main frame **410** and the mirror support **430** have a plurality of holes near the vertices of the octagon of the main frame **410**, and a speaker **920** is provided in each of the holes. Although FIG. **11** and FIG. **12** show that the number of the speakers **920** is four, the number of the speakers **920** is not limited thereto.

The casters **440** and the adjusters **450** are coupled to a bottom surface of the main frame **410**. Each pair of one of the casters **440** and one of the adjusters **450** may be disposed near a vertex of the bottom surface of the main frame **410**, and the pairs of the casters **440** and the adjusters **450** may be disposed near ends of a diagonal cross of the bottom surface.

The background assembly **300** is disposed on the mirror support **430**, and include a plurality of background members **310** and **320** that may be seen through a partial mirror. The background members **310** and **320** may include first background members **310** disposed on at least one base plate **330** that is disposed on the mirror support **430** and second background members **320** disposed directly on the mirror support. However, all of the background members **310** and **320** may be disposed on either the at least one base plate **330** or the mirror support **430**. According to an embodiment of the present invention, the arrangement of the background members **310** and **320** and/or the at least one base plate **330** may be substantially the same in view of four orthogonal directions of a diagonal cross. However, the arrangements and structures of the background members **310** and **320** and/or the at least one base plate **330** may be designed freely without restrictions.

According to an embodiment of the present invention, referring to FIG. **13**, the first background members **310**, which are disposed on the at least one base plate **330**, may include miniature buildings **311** and information boards **318**, for example. The second background members **320**, which are directly on the mirror support **430**, may include a plurality of signs including double-sided signs **360** and single-sided signs **370**, for example.

Referring to FIG. **14**, the at least one base plate **330** may include a center plate **331** and a plurality of, for example, four peripheral plates **335** disposed around the center plate **331**. The center plate **331** has a plurality of lighting holes **333**, and each of the peripheral plates **335** also has a plurality of lighting holes **337**.

Referring to FIG. **15** and FIG. **16**, a plurality of miniature buildings **311** may be disposed on each of the peripheral plates **335** and the center plate **331**, and an information board **318** may be disposed on each of the peripheral plates **335**. The miniature buildings **311** and the information board **318** may be aligned with the lighting holes **333** and **337** of the plates **331** and **335**.

In addition, referring to FIG. **16**, a plurality of lighting members **340** are disposed under respective lighting holes **333** and **337** of the plates **331** and **335**. Each of the lighting members **340** may include a circuit board **342** and a plurality of discrete light sources, for example, light emitting diodes (LEDs) **344** disposed on the circuit board **342**.

Referring to FIG. **17**, a miniature building **311** may include a base **312**, a top **313**, and a plurality of lateral walls **314**

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coupled to the base **312** and the top **313**. The base **312** is fixed to the plate **331** or **335** and has a lighting hole **315** at a center thereof. The lateral walls **314** may be translucent or transparent such that the light emitted from the LEDs **344** may pass through the lateral walls **314** of the miniature building **311** via a lighting hole **333** or **337** of the plate **331** or **335** and the lighting hole **315** of the base **312** of the miniature building **311**. The lateral wall **314** may be covered with an oblique sheet having a plurality of windows through which the light from the LEDs **344** may pass such that the miniature building **311** may look like an actual building at night.

Referring to FIG. **16** again, the information board **318** may be fixed to a standing bracket **319** that may be fixed to the peripheral plate **335** or another member. The information board **318** may be used in displaying information about a player, for example, a game history of the player, which will be described later.

Referring to FIG. **18**, a double-sided sign **360** may include a base bracket **361**, a top bracket **362**, a pair of side brackets **363**, a top cover bracket **364**, a pair of translucent plates **366**, and a light source **369**.

The light source **369** may include an LED strip in a lighting channel having a shape of a hollow rectangular bar. The light emitted by the light source may change between green and red. The base bracket **361** includes four upward portions **368**, and the light source **369** is disposed in a space made by the four upward portions **368**. The top bracket **362** and the upward portions **368** of the base bracket **361** are disposed between the translucent plates **366**, which are disposed inclined. The top bracket **362** and upper edges of the translucent plates **366** are covered by the top cover bracket **364**, and the top bracket **362** is coupled to the top cover bracket **364**. In addition, lateral edges of the top bracket **362** and the translucent plates **366** are covered by the side brackets **363**.

The light emitted from the light source **369** may pass through both the translucent plates **366**. Referring to FIG. **13**, the double-sided signs **360** are arranged such that the base bracket **361** and the top bracket **362** are aligned in a diagonal direction with respect to a center of the mirror support **430**. In addition, the double-sided signs **360** are from disposed near a midpoints of edges of the octagonal mirror support **430** such that the double-sided signs **360** may be seen by the players at the player terminals **600** disposed at both sides of the double-sided signs **360**. In order to secure spaces occupied by the double-sided signs **360**, the corners of the center hole **432** of the support **430** are made concave.

Referring to FIG. **19**, a single-sided sign **370** may include a base bracket **371**, a front plate **372**, a rear cover **373**, a circuit strip **375**, and a plurality of light sources **376**.

Each of the light sources **376** may include an LED, and the light sources **376** are coupled to a front surface of the circuit strip **375**. The front plate **372** may be translucent or transparent, and faces the light sources **376** with being inclined. The rear cover **373** may be opaque and larger than the front plate **372** to extend beyond an upper edge of the front plate **372**.

The light emitted from the light source **376** may pass through the translucent front plate **372** while the rear cover **373** may not allow the light to pass through. Referring to FIG. **13**, the single-sided signs **370** are arranged such that the front plates **372** face an outward direction.

The double-sided signs **360** and the single-sided signs **370** may be arranged alternately along a circumference of the mirror support **430**.

The above-described structure and arrangement of the background assembly **300** are only an example. The background assembly **300** may include anything that can be seen through a partial mirror arranged in any way.

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A structure of the mirror assembly 200 of the gaming machine 1 is described in detail with reference to FIG. 20 and FIG. 21 as well as FIG. 8 to FIG. 10.

FIG. 20 is a schematic perspective view of the mirror assembly of the gaming machine shown in FIG. 8 to FIG. 10, and FIG. 21 is a schematic top view of the mirror assembly shown in FIG. 20.

Referring to FIG. 20 and FIG. 21, the mirror assembly 200 has a shape of a polyhedral dome that includes a mirror frame 210 as edges thereof, and a plurality of partial mirrors 220, a plurality of cover plates 230, and a top plate 240 as facets thereof. Referring to FIG. 8 to FIG. 10, the mirror assembly 200 covers the background assembly 300, and is coupled to the mirror support 430 and supported by the mirror support 430.

The mirror frame 210 includes a plurality of brackets that are connected to each other and hold the partial mirrors 220. The top plate 240 is nearly square, the partial mirrors 220 are hexagonal, and the cover plates 230 are isosceles triangular. The number of the partial mirrors 220 and the number of the cover plates 230 may be four, respectively. Each of the partial mirrors 220 has an upper edge meeting an edge of the top plate 240, a pair of upper lateral edges meeting upper lateral edges of other partial mirrors 220, and a pair of lower lateral edges meeting oblique edges of the cover plates 230. An angle made by the upper edge of the partial mirror 220 with the edge of the top plate 240 may be about 45 degrees.

The partial mirrors 220 may partially transmit incident light and partially reflect incident light such that players at the player terminals 600 may see combined images including images from the primary display assembly 100 and images of the background assembly 300.

A structure of the primary display assembly 100 of the gaming machine 1 is described in detail with reference to FIG. 22 and FIG. 29 as well as FIG. 8 to FIG. 10.

FIG. 22 is a schematic partially-exploded perspective view of the primary display assembly of the gaming machine shown in FIG. 8 to FIG. 10, FIG. 23 is a schematic partially-exploded top view of the primary display assembly shown in FIG. 22, FIG. 24 is a schematic bottom view of the primary display assembly shown in FIG. 22, FIG. 25 is a schematic exploded perspective view of a display panel assembly of the primary display assembly shown in FIG. 22, FIG. 26 is a schematic exploded perspective view of a protection of the display panel assembly shown in FIG. 25, FIG. 27 is a schematic perspective view of a display support of the primary display assembly shown in FIG. 22, FIG. 28 is a schematic perspective view of an electric circuit assembly of the primary display assembly shown in FIG. 22, FIG. 29 is a top view of the mirror assembly shown in FIG. 8 to FIG. 10 and openings in a base plate of the display support shown in FIG. 27, and FIG. 30 and FIG. 31 illustrate operations of the gaming machine shown in FIG. 8 to FIG. 10.

Referring to FIG. 22 to FIG. 24, the primary display assembly 100 includes a plurality of display panel assemblies 110, a display support 120, a panel cover assembly 130, and an electric circuit assembly 140. Referring to FIG. 8 to FIG. 10, the primary display assembly 100 is disposed over the mirror assembly 200 and supported by the post assemblies 500.

The electric circuit assembly 140 is disposed on a center of the display support 120, and four display panel assemblies 110 are disposed on the display support 120 such that the display support 120 supports the electric circuit assembly 140 and the display panel assemblies 110. The display panel assemblies 110 are arranged around the electric circuit assembly 140, and the display panel assemblies 110 may be electrically connected to the electric circuit assembly 140.

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The display panel assemblies 110 are covered with the panel cover assembly 130, and the panel cover assembly 130 is coupled to the display support 120. The primary display assembly 100 may further include a blocking member in front of the display panel assemblies 110 as described above with reference to FIG. 3.

Referring to FIGS. 25 and 26, a display panel assembly 110 includes a rectangular display panel 112 and a protection 115 receiving and protecting the display panel 112. The display panel assembly 110 may further include a filter disposed on a screen of the display panel 112 as described above with reference to FIG. 4 to FIG. 7B. The protection 115 includes a rectangular transparent plate 116 and four side brackets 117. The transparent plate 116 may include glass or acrylic resin. The side brackets 117 define a cuboid space receiving the transparent plate 116 and the display panel 112 in sequence, and the display panel 112 is disposed on the transparent plate 116 such that a screen of the display panel 112 faces the transparent plate 116. A plurality of rubber strips 118 are disposed between the transparent plate 116 and the side brackets 117 and between the transparent plate 116 and the display panel 112 to protect the transparent plate 116 and the display panel 112.

Referring to FIG. 27, the display support 120 includes a base plate 122, a frame 124, and a plurality of partition brackets 129.

The base plate 122 is octagonal, and has two pairs of long edges and two pairs of short edges. The long edges in each pair of long edges are substantially parallel to each other, and two pairs of long edges are substantially perpendicular to each other. Similarly, the short edges in each pair of short edges are substantially parallel to each other, and two pairs of short edges are substantially perpendicular to each other.

The base plate 122 has four rectangular openings 123 near its long edges. A long edge of the openings 123 is substantially parallel to a corresponding long edge of the base plate 122. The partition brackets 129 are fixed to the base plate 122 near short edges of the openings 123, and extend substantially parallel to the short edges of the openings 123. Each of the display panel assemblies 110 is disposed between a pair of the partition brackets 129 such that the screens of the display panels 112 may be exposed through the openings 123.

The frame 124 is fixed to the base plate 122, and includes a circumferential portion 125, a cross portion 126, and cover fixing portions 127. Each of the portions 125, 126 and 127 may include at least one rectangular hollow bar. The circumferential portion 125 extends along a circumference of the base plate 122. The cross portion 126 crosses the base plate 122 in a cross, and runs between the openings 123. The cover fixing portions 127 extend substantially parallel to partition brackets 129 to meet the circumferential portion 125 and the cross portion 126, and are disposed outer than the partition brackets 129 with respect to the openings 123.

Referring to FIG. 28, the electric circuit assembly 140 includes a plurality of circuits including a first power supply (not shown) contained in a power supply box 141, a pair of circuit breakers 142, a VGA splitter 143, a second power supply 144, and a plurality of fans 145. The fans 145 are fixed on a fan supporting bracket 146 having a pair of openings 147 exposing the fans 145.

The electric circuit assembly 140 further includes a support table 150 for fixing and supporting the circuits 141-145. The support table 150 includes a square table top 152 and a plurality of legs 154 coupled to the table top 152 near the corners of the table top 152. The support table 150 further includes a pair of supporting posts 156 coupled to the table top 152 near the center of the table top 152. The legs 154 and the support-

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ing posts 156 may be coupled to the base plate 122 of the display support 122. The table top 152 has a center hole 153 and a side hole 154. The power supply box 141 may be fixed to two adjacent legs 155 of the support table 150, and the fan supporting bracket 146 may be fixed to two other adjacent legs 155 of the support table 150. The circuit breakers 142 passes through a wall of the power supply box 141, and are fixed to the wall. The VGA splitter 143 and the second power supply 144 are coupled to the wall of the power supply box 141.

Referring to FIG. 22 to FIG. 24 again, the panel cover assembly 130 includes a plurality of panel covers 131 and a plurality of fixing covers 135. The fixing covers 135 are coupled to the cover fixing portions 127 of the frame 124 in the display support 120, and the panel covers 131 are coupled to the fixing covers 135. A fixing cover 135 is aligned with an area surrounded by two adjacent cover fixing portions 127 and the circumferential portion 125 of the frame 120. A panel cover 131 is aligned with an area surrounded by two cover fixing portions 127 interposing a panel assembly 110, the circumferential portion 125 of the frame 120, the cross portion 126, and a lateral surface of the electric circuit assembly 140.

A panel cover 131 includes a horizontal portion 132 covering a display panel 112, a vertical portion 133 covering a lateral surface of the electric circuit assembly 140, and a bracket portion 134. The vertical portion 133 is connected to an upper edge of the horizontal portion 132, and the bracket portion 134 is connected to a lower edge of the horizontal portion 132. The horizontal portion 132 covers a rear surface of a display panel 112 disposed between the partition brackets 129, and the horizontal portion 132 has a plurality of heat dissipation holes for dissipating the heat released by the display panel 112. The vertical portion 133 covers a lateral surface of the electric circuit assembly 140, and the vertical portion 133 has a plurality of heat dissipation holes for dissipating the heat released by the electric circuit assembly 140.

Referring to FIG. 29 to FIG. 31 as well as FIG. 8 to FIG. 10, each of the openings 123 of the base plate 122 exposing a screen of the display panels 112 is aligned with a partial mirror 220 of the mirror assembly 200 such that images 113 and 114 on the screen may be reflected by the partial mirror 220 to be shown to a player. In addition, the images of the background members 310 and 320 including the miniature buildings 311, the information board 318, the single-sided sign 370, and the double-sided sign 360 illuminated by the light sources 344, 369 and 376 may pass through the partial mirror 220 to overlap the images 113 and 114. The images 113 and 114 may include an information image 114 about a gaming history, and the information image 114 may be aligned with the information board 318 as if the information image 114 were disposed on the information board 318.

A structure of the post assembly 500 of the gaming machine 1 is described in detail with reference to FIG. 32 to FIG. 34 as well as FIG. 8.

FIG. 32 is a schematic exploded perspective view of the post assembly of the gaming machine shown in FIG. 8 to FIG. 10, FIG. 33 is a schematic sectional view of a post and a top bracket in the post assembly shown in FIG. 32, and FIG. 34 is a schematic bottom view of portions of the post assembly and the primary display assembly.

Referring to FIG. 32 and FIG. 33, a post assembly 500 includes a post 510, an assistant piece 515, a supporting bracket 520, a fixing bracket 530, a post stopper 540, a pair of cover brackets 550, and a top bracket 560 as facets thereof. Referring to FIG. 8, the post assembly 500 supports the display assembly 100 and is fixed to the base support 400.

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The post 510 has a shape of a hollow cylinder, and the assistant piece 515 protrudes outward from the outer circumferential surface of the post 510. The assistant piece 515 is disposed at the top of the post 510 and may have a top surface substantially parallel to a top surface of the post 510 such that the assistant piece 515 may help the post 510 supporting the top bracket 560 and the display assembly 100.

The post 510 is inserted into the supporting bracket 520, and fastened by the fixing bracket 530 that are fixed to the main frame 410 of the base support 400. The post stopper 540 is fixed to the main frame 410, and disposed under the fixing bracket 530 so that the supporting bracket 530 may not slip down.

The top bracket 560 has a hole 562 and includes a pair of vertical protrusions 564 extending downward from a circumference of the hole 562. The vertical protrusions 564 are disposed opposite in a diagonal direction of the hole 562. The top bracket 560 is coupled with the post 510 such that the vertical protrusions 564 are substantially in contact with an inner circumference of the post 510. In addition, the top bracket 560 is coupled to the cover brackets 550 that covers upper portion of the post 510 including the assistant piece 515. The top bracket 560 is coupled with the base plate 122 and the fixing cover 135 of the primary display assembly 100. In this way, the primary display assembly 100 is supported by the post assembly 500 that is coupled to the base support 400.

A structure of the player terminal 600 of the gaming machine 1 is described in detail with reference to FIG. 35 as well as FIG. 8.

FIG. 35 is a schematic perspective view of the player terminal of the gaming machine shown in FIG. 8 to FIG. 10.

The player terminal 600 includes a cabinet 610 and a top door 620 disposed on the cabinet 610.

The cabinet 610 may include electrical circuits therein, and includes a main body 611, a top body 612 disposed between the main body and the top door 620, and a support plate 613 disposed under the main body 611. According to an embodiment of the present invention, the main body 611 may include a main controller therein, and the top body 612 may include a relay unit and a sensor therein.

The main body 611 includes a foot lamp 615 on a front surface thereof near the support plate 613, and the foot lamp 615 illuminates the support plate 613 and a player's feet sitting in front of the player terminal 600. When there is no player at the player terminal 600, the foot lamp 615 may turn off. The main body 611 further includes a plurality of speakers 616 and a head lamp 617 that are disposed behind the top door 620 in a detachable manner.

The top body 612 includes a card slot 618 and an information display 619 on a front surface thereof. The card slot 618 is provided for a player to insert a player card that may store information about the player, for example, a player ID and a gaming history of the player. The player card inserted in the card slot 618 may be read by a card reader (not shown). The information stored in the player card may be recorded by a player tracking system (PTS), and may be displayed on the information display 619.

The top door 620 includes a terminal display 621, an operation unit 622, a coin entry 623, and a bill entry 624.

The terminal display 621 displays images associated with a game, and occupy a large area of the top door 620. The terminal display 621 may include a touch screen for player's input.

The operation unit 622 may be used for a player to play a game, and includes a plurality of buttons 622a-622d, for example, a play button (or a shake/shooter button) 622a, a select button 622b, a payout button 622c, and a help button.

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The play button **622a** and the select button **622b** are disposed below the terminal display **621**, and the payout button **622c** and the help button **622d** are disposed at a side of the terminal display **621**.

The play button **622a** may cause, when pushed, an action of a game. For example, in craps or sic bo, a player may press the play button **622a** to make virtual dice roll, the virtual dice shown on the partial mirror **220**. The select button **302** is used in selecting bet or in confirming an input of a player. The payout button **303** may be provided for a player who wishes to finish a game and to be paid out for remaining credits. The help button **304** may be used for a player to get information about a game.

The player terminal **600** may further include a hopper unit (not shown) containing coins or medals and discharging medals or coins for payout, etc.

An electrical circuit configuration of the gaming machine **1** shown in FIG. **8** to FIG. **10** is described in detail with reference to FIG. **36** as well as FIG. **8** to FIG. **10**.

FIG. **36** is a block diagram of a circuit configuration of the game machine shown in FIG. **8** to FIG. **10**.

The gaming machine **1** includes a main controller **90**, a primary display **80**, and a plurality of player terminals **600**. The primary displays **80** correspond to the display panels **112** of the display panel assembly **110**, and the primary display **80** and the player terminals **600** are connected to the main controller **90**.

The main controller **90** may execute a game and may control other parts of the gaming machine **1**. The main controller **90** includes a microcomputer **91**, an I/O interface **97**, a communication interface **98**, and a timer **99**, and may be included in the control box **910** shown in FIG. **11**.

The microcomputer **91** includes a CPU **92**, a ROM **93**, a RAM **94**, and a bus **95**. Data communication between the CPU **92**, the ROM **93**, and the RAM **94** is performed via the bus **95**. The CPU **92** is connected to the primary display **80**, the communication interface **98**, and the timer **99** via the I/O interface **97**.

The ROM **93** may be configured to store programs used in executing a game and controlling the primary display **80** and the player terminals **600**. The ROM may further store a payment table, for example.

The RAM **94** may be configured to temporarily store various data used by the CPU **92**. According to an embodiment of the present invention, the RAM **94** may store bet information from the player terminals **600** and intermediate or resultant data related to a game processing executed by the CPU **92**.

The CPU **92** executes a game using the programs and the data stored in the ROM **93** and the RAM **94**. In addition, the CPU **92** controls the primary display **80** via the communication interface **98**, and performs bidirectional data communication with the player terminals **600**, and controls the player terminals **600** via the communication interface **98**. According to an embodiment of the present invention, the CPU **92** sets a bet time with the timer **99** and receives bet information from the player terminals **600**. The CPU **92** executes a game round when the CPU **92** receives bet information from all the player terminals **600**. The CPU **92** performs win determination and win prize determination based upon the win determination and the bet information from the player terminals **600**.

An electrical circuit configuration of the player terminal **600** of the gaming machine **1** shown in FIG. **8** and FIG. **35** is described in detail with reference to FIG. **37** as well as FIG. **8** to FIG. **10**.

FIG. **37** is a block diagram of a circuit configuration of the player terminal of the game machine shown in FIG. **8** and FIG. **35**.

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Referring to FIG. **37**, a player terminal **600** includes a terminal controller **630**, a gaming board **640**, and a plurality of peripheral devices.

The peripheral devices may include output units including a terminal display **621**, a display driver **621d** for driving the terminal display **621**, a speaker **616**, a sound output circuit **616d** for controlling the speaker **616** to output sounds, and a hopper **651**, for example. The hopper **651** stores and discharges gaming media.

The peripheral devices may further include input units including a plurality of buttons **622a-622d**, a data receiver **652**, a game media receiver **653**, and a touch panel **625**. The plurality of buttons **622a-622d** includes a play button **622a**, a select button **622b**, a payout button **622c**, and a help button **622d**, and the touch panel **625** may be integrated into the terminal display **621**. The game media receiver **653** receives game media and generates and transmits a credit signal to the data receiver **652**, and the data receiver **652** transmits the credit signal or a corresponding signal to the CPU **631**. The peripheral devices may further include a timer **654**. Some of the peripheral devices such as the terminal display **621**, the speaker **616**, and the buttons **622a-622d** are also shown in FIG. **35**.

The terminal controller **630** includes a CPU **631**, a ROM **632**, and a RAM **633**, and is connected to the CPU **92** of the main controller **90**.

The ROM **632** may store programs for achieving basic functions of the player terminal **600**, various kinds of programs required for controlling the player terminal **600**, and a data table or the like. The RAM **633** may temporarily store various data used by the CPU **631**.

The CPU **631** may be connected to the CPU **92** of the main controller **90** and the input units **622a-622d**, **652** and **625**, and may perform various operations in response to commands from the control of the CPU **92** of the main controller **90** or inputs from the input units **622a-622d**, **651**, **652** and **625**.

According to an embodiment of the present invention, the CPU **631** receives a command signal from the CPU **92** of the main controller **90**, performs various processes with the data or the programs stored in the ROM **632** and the RAM **633**, and controls peripheral devices of the player terminal **600** base on a result of the processes. In addition, the CPU **631** conducts proper operations in response to the inputs from the input units **622a-622d**, **651**, **652** and **625**, executes various processes with the data or the programs stored in the ROM **632** and the RAM **633**, and then, transmits results of the processes to the CPU **92** of the main controller **90**.

The display driver **621d** may include a program ROM, an image ROM, an image control CPU, a work RAM, a VDP (video display processor), and a video RAM, for example. The program ROM may store programs for image control, related to display in the terminal display **621** or various kinds of selection tables. The image ROM may store dot data or the like for forming an image to be displayed on the terminal display **621**, for example. The image control CPU may select an image to be displayed on the terminal display **621** among the dot data stored in the image ROM in advance based upon the parameter set by the CPU **631**. The work RAM may be used as a temporary storage when the image control CPU executes an image control program. The VDP forms an image according to the contents of display determined by the image control CPU and then outputs the formed image to the terminal display **621**. The video RAM is configured as temporary storage means when the VDP forms an image.

The touch panel **625** is mounted onto a front face of the terminal display **621**, detects a player's touch input thereon, and transmits information of the touch input to the CPU **631**.

According to an embodiment of the present invention, RAM **633** may store the player's bet information based upon the information when the touch input is related to bet. The bet information is transmitted to the CPU **92** of the main controller **90** and then is stored in a corresponding storage area of the RAM **94**.

The CPU **631** increases credits of a player stored in the RAM **633** after receiving the credit signal from the data receiver **652**.

The gaming board **640** includes a CPU **641**, a boot ROM **642**, and a ROM **643** that are interconnected by an internal bus. The gaming board **640** further includes a card slot **644s**, a memory card **644** in the card slot **644s**, an IC socket **645s**, and a generic array logic (GAL) **645** in the IC socket **645s**.

A card slot **644s** is connected to the CPU **631** via an IDE bus.

The memory card **644** may store a game program and a game system program. The memory card **644** may include a nonvolatile memory such as CompactFlash (registered trademark) and may be removed from the card slot **644s**. Therefore, types or contents of the game to be played at the player terminal **600** may be changed by rewriting the memory card **644** with another game program and game system program or by exchanging a memory card **644** storing with another game program and a game system program. Game programs may include a program or the like related to the progress of a game. The game programs include image data or sound data and the like to be outputted during the play of a game.

A GAL **64** is a kind of PLD having an OR-fixed arrayed structure. The GAL **64** has a plurality of input ports and output ports. When predetermined data is inputted to an input port, data corresponding to the predetermined data is outputted from an output port.

An IC socket **645s** is configured to removably mount the GAL **64**, and is connected to the CPU **631** through a PCI bus.

The CPU **641**, the ROM **643**, and the boot ROM **642** are connected to the CPU **631** by means of the PCI bus. The PCI bus transmits a signal between the CPU **631** and a gaming board **640** and then supplies power from the CPU **631** to the gaming board **640**. The ROM **643** stores country identification information and an authentication program. The boot ROM **642** stores a preliminary authentication program and programs (boot codes) or the like for the CPU **641** to initiate the preliminary authentication program.

An authentication program is a program (tampering check program) for authenticating a game program and a game system program. The authentication program is described along authentication and certification that a game program and a game system program targeted for authentication acquisition processing are not tampered, i.e., procedures (authentication procedures) for authenticating the game program and the game system program. The preliminary authentication program is described along certification that an authentication program targeted for authentication processing is not tampered, i.e., procedures (authentication procedures) for authenticating authentication programs.

The images displayed on the terminal display **621** of the player terminal **600** according to an embodiment of the present invention is described in detail with reference to FIG. **38** to FIG. **40**.

FIG. **38** to FIG. **40** are schematic screen shots of the terminal display for a game of craps according to one embodiment of the present invention.

As described above, a touch panel (**625** in FIG. **37**) is integrated onto the terminal display **621** of the player terminal **600** and disposed on the terminal display **621**. When a player

touches a touch area in the touch panel **625** on the terminal display **621**, thereby enabling instruction input.

A screen for craps, for example, shows a betting board **680** including a plurality of touch-sensitive betting areas and other display areas in periphery of the betting board **680**, for example, two rows of display areas disposed above the betting board **680**, a column of display areas left to the betting board **680**, and two rows of display areas disposed below the betting board **680**.

An uppermost row of the screen shows a station number **651**, a remaining bet time **652** and **653**, a win meter **654**, a bet meter **655**, a denomination **656**, and a credit meter **657** in sequence from left to right. The station number **651** denotes a unique identification number defined by the player terminal **600**. The remaining bet time is shown as bars **652** and numerals **653**. The win meter **654** shows credits won in a game round. The bet meter **655** shows the bet amount in the current game round by way of credits. The denomination **656** shows a current denomination. The credit meter **657** shows current credits of a player or a player terminal **600**.

A second row shows a roll history **658** and a hop bet extension button **659** disposed right to the roll history **658**. The roll history **658** includes results of past game rounds, which are listed in sequence, and each of the results includes a sum and rolled top surfaces of two dice, for example. According to an embodiment of the present invention, the roll history **658** may be touch-sensitive such that details of a game round, for example, including a betting area, a bet amount, a win prize are shown when a player touches an area showing a result of the game round. Referring to FIG. **39**, the hop bet extension button **659**, if touched, cause to pop up a betting board **690** for hop bet. The betting board **690** for hop bet will be described later.

A leftmost column disposed under the roll history **658** shows a bet type selection area **660** including a plurality of selection buttons **661-666** denoted by "PASS LINE," "ODDS," "COME," "COME ODDS," "PLACE," and "BUY," for example. When a player touches one of the selection buttons **661-666**, a window showing information about the selected bet type may pop up over a betting board **500**.

A game rules button **669** is disposed under of the bet type selection area **660**. When a player touches the game rules button **669**, the screen shows game rules.

A lowermost row shows a bet rule button **671** and an environment selection **672**, a bet range **673**, a winning rolled-number **674**, bet buttons **675** (**675a-675e**), a cancel button **676** and an all-cancel button **677**, an all-off button **678**, and an all-on button **679** in sequence from the left to the right.

The bet rule button **671** is used in popping up a window showing information for description of each bet type in a craps game. The environment selection **672** shows two national flags partially overlap each other, and the environment is established for the country of the front flag. Whenever a player touches the environment selection **672**, the national flags exchange their positions and the environment settings are changed.

The bet range **673** shows a minimum and a maximum of a bet range allowed in one game round. The winning rolled-number **674** shows sum of the rolled numbers of two dice for a player's win in the current bet.

The bet buttons **675a-675e** are used in betting and denoted by "1," "5," "25," "100," and "OFF." For example, when a player touches one of the bet buttons **675a** denoted by "1," one credit is set as a bet amount. When a player touches the bet button **675e** denoted by "OFF," the bet amount is reset. The

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cancel button 676 is used in cancelling an immediately preceding bet, and the all-cancel button 677 is used in cancelling all cancelable bets.

The betting board 680 includes a plurality of betting areas. Betting areas denoted by "PASS LINE," "Don't Pass Bar," "FIELD," and "COME" are arranged in an upward direction, and a betting area denoted by "BIG" is disposed left to the betting areas "Don't Pass Bar" and "FIELD." Betting areas "Don't COME Bar," "4," "5," "SIX," "8," "NINE," and "10" are arranged in a row on the betting area "COME." At a right portion of the betting board 500, betting areas denoted by "C&E," "HARDWAYS," and "ONE ROLL BETS" are disposed. Referring to FIG. 40, betting areas "DON'T COME," "DON'T COME ODDS," "PLACE TO LOSE," "LAY," "COME," "COME ODDS," "PLACE," "BUY" are set at each of the betting areas "4," "5," "SIX," "8," "NINE," and "10."

A betting of a player may be conducted within a predetermined time duration (about 60 seconds, for example). For example, a player may select a betting area of the betting board 500 by touching the betting area with the finger or the like. Thereafter, the player may bet credits on the selected betting area by touching the bet buttons 675a-675d. However, the selection of the betting area may follow the betting operation.

FIG. 38 shows that a bet of one credit is placed on each of the betting areas "PASS LINE," "Don't Pass Bar," and "HARDWAYS." A word "HARD" is written under the number "8" of the winning rolled-number 674, and a word "PUSH" is shown under the number "12" of the winning rolled-number 674. The word "HARD" under "8" denotes that a player win when the same numbers of 4 face up in the two dice, and the word "PUSH" under "12" denotes that the result is a tie when the rolled numbers are 12. In other words, the winning rolled-number 674 may show the roll numbers and the betting area on which the player betted.

The betting of the player is finalized when the remaining bet time reaches 0.

The screen shown in FIG. 39 shows a hop betting board 690 for hop bet which pops up when a hop bet extension button 659 is touched. The hop betting board 690 shows betting areas corresponding to all of the combinations of rolled numbers of two dice. For example, total of 21 betting areas denoted by "1-1," "1-2," "1-3," "1-4," "1-5," "1-6," "2-2," "2-3," "2-4," "2-5," "2-6," "3-3," "3-4," "3-5," "3-6," "4-4," "4-5," "4-6," "5-5," "5-6," and "6-6" are shown in the hop betting board 690. Among the "HOP BET" betting areas, betting areas denoted by "2-2," "3-3," "4-4," and "5-5" have the same rolled numbers as those of "HARDWAYS." However, "HARDWAYS" is a bet type that a player wins when a hard way (same rolled numbers) occurs before an easy way (different rolled numbers), whereas "HOP BET" is a bet type that a player wins (one-roll bet) when a combination of rolled numbers of two dice in a roll executed right after betting is the same as a combination on which the player betted. Among the "HOP BET" betting areas, the betting areas denoted by "1-1," "1-2," "5-6," and "6-6" have the same rolled numbers as the betting areas of "Horn BET" in "ONE ROLL BETS," and the bet contents and payout are also similar. For example, the gaming machine 1 is configured to be able to bet on all of the combinations of rolled numbers of two dice as one-roll bets in a craps game. A craps game betting board and a betting board which is capable of betting on all of the combinations of rolled numbers of two dice are set separately.

FIG. 40 shows a screen when the betting area "8" is selected among the betting areas "4," "5," "SIX," "8," "NINE," and "10" shown in FIG. 38. Referring to FIG. 30, a window showing a betting board extension 695 pops up. An

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image of the number "8" is disposed at a center of the betting board extension 695, and a plurality of betting areas denoted by "DON'T COME," "DON'T COME ODDS," "PLACE TO LOSE," "LAY," "COME," "COME ODDS," "PLACE," and "BUY" are arranged at the left and right of the number image "8." Numeric value selection buttons 521 and 522 for moving to adjacent betting areas and a "CLOSE" button 523 are disposed in a lowermost row of the betting board extension 695.

While this invention has been described in connection with what is presently considered to be practical embodiments, it is to be understood that the invention is not limited to the disclosed embodiments, but, on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

What is claimed is:

1. A gaming machine comprising:

a display panel configured to display images of a game, the display panel including a screen facing downward;
a partial mirror disposed under the display panel and inclined with respect to the screen to partially reflect the images from the display panel into a forward direction;
a controller configured to execute the game and to control the display panel; and
a blocking member disposed in front of the display panel and extending downward from the display panel, wherein the blocking member has a lower edge disposed higher than a lower edge of the partial mirror such that the images reflected by the partial mirror is seen from the forward direction and the display panel itself is not seen from the forward direction.

2. The gaming machine of claim 1, further comprising a plurality of player terminals connected to the controller.

3. The gaming machine of claim 2, wherein the game includes one of craps, sic bo, and roulette.

4. The gaming machine of claim 1, wherein a surface of the screen is disposed on a horizontal plane.

5. The gaming machine of claim 4, wherein the partial mirror makes an angle with the surface of the screen, the angle ranging from about 40 degrees to about 50 degrees.

6. A gaming machine comprising:

a display panel configured to display images of a game, the display panel including a screen facing downward;
a partial mirror disposed under the display panel and inclined with respect to the screen to partially reflect the images from the display panel into a forward direction;
a controller configured to execute the game and to control the display panel; and
a filter disposed on the screen of the display panel, wherein the filter includes a translucent area facing a peripheral area of the screen and partially transmitting light from the display panel, and the translucent area of the filter has a transmittance that increases from an outer edge of the translucent area to an inner edge of the translucent area such that a boundary of the display panel is not recognized.

7. A gaming machine comprising:

a display assembly comprising a plurality of display panels configured to display images of a game, each of the display panels including a screen facing downward;
a mirror assembly disposed under the display panels and comprising a plurality of partial mirrors disposed inclined with respect to the screens to partially reflect the images from the display panels into a forward direction, the partial mirrors arranged along a loop such that rear surfaces of the partial mirrors face each other;

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a controller configured to execute the game and to control the display panel; and
 a blocking member disposed in front of the display panels and extending downward from the display panels,
 wherein the blocking member has a lower edge disposed
 higher than a lower edge of the mirror assembly such
 that the images reflected by the partial mirror is seen
 from the forward direction and the display panel itself is
 not seen from the forward direction.
 8. The gaming machine of claim 7, wherein the mirror
 assembly has a shape of a polyhedral dome.
 9. The gaming machine of claim 8, wherein the mirror
 assembly further comprises a plurality of brackets coupling
 the partial mirrors to each other.
 10. The gaming machine of claim 7, wherein the display
 assembly further comprises:
 a base plate configured to support the display panels and
 having a plurality of openings exposing the screens of
 the display panels; and
 a panel cover assembly configured to cover top surfaces of
 the display panels.

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11. The gaming machine of claim 7, further comprising a
 base support configured to support the mirror assembly.
 12. The gaming machine of claim 11, further comprising a
 post assembly coupled to the base support and the display
 assembly to support the display assembly.
 13. The gaming machine of claim 7, further comprising a
 plurality of player terminals connected to the controller.
 14. The gaming machine of claim 13, wherein the plurality
 of player terminals are arranged such that at least two of the
 plurality of player terminals correspond to one of the partial
 mirrors.
 15. The gaming machine of claim 13, wherein the game
 includes one of craps, sic bo, and roulette.
 16. The gaming machine of claim 7, wherein the screens of
 the display panels are disposed on a horizontal plane.
 17. The gaming machine of claim 16, wherein the partial
 mirrors make an angle with the screens, the angle ranging
 from about 40 degrees to about 50 degrees.
 18. The gaming machine of claim 7, wherein the display
 panels are configured to display substantially the same
 images.

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